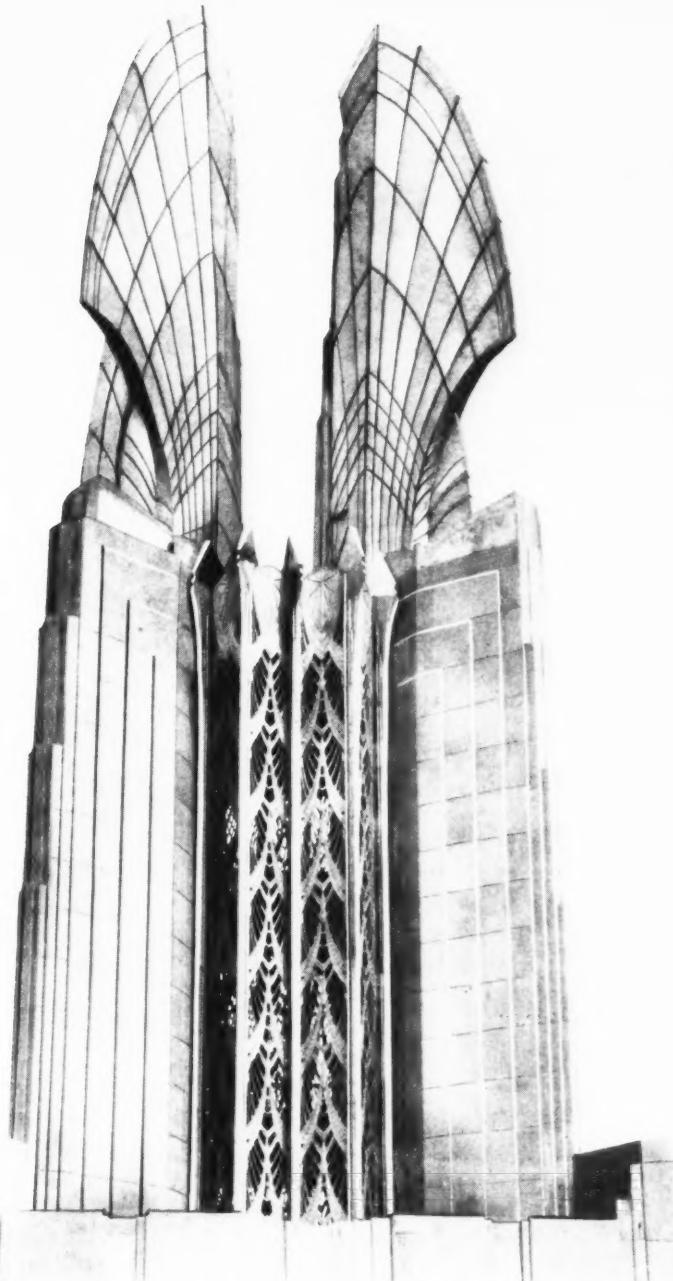


# American Artisan

**THE WARM AIR HEATING  
AND SHEET METAL JOURNAL**

FOUNDED 1880

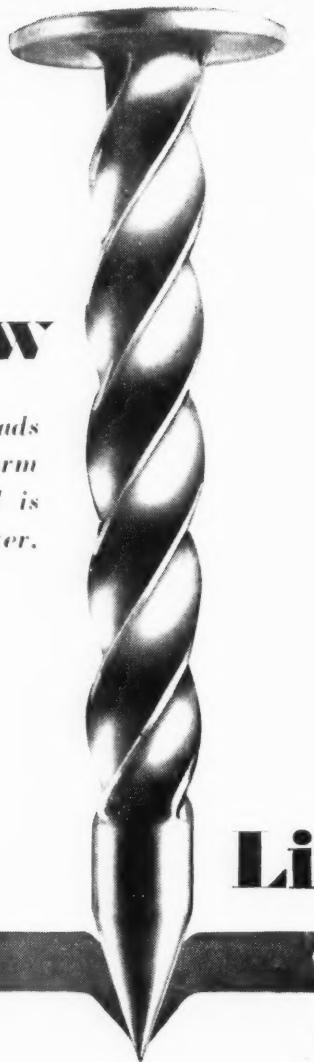


"Wings of Progress," a Cast, Sheet and Extruded Aluminum Job on the Genesee Valley Trust Building, Rochester, N. Y.

FEBRUARY 2, 1931

## Like a Screw

*These hardened spiral threads cut into the metal and worm into wood as the Screwnail is driven. Holds 4 times better.*



## Like a Punch

*This hardened needle point pierces metal with ease. Drives right through metal without bending or breaking.*

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*...with these unique Screwnails*

All the security a sheet metal worker could want in fastening metal to wood is provided by Hardened Screwnails. They hold four times stronger than ordinary nails. Yet it is actually easier to make fastenings with Screwnails.

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February 2

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REWS



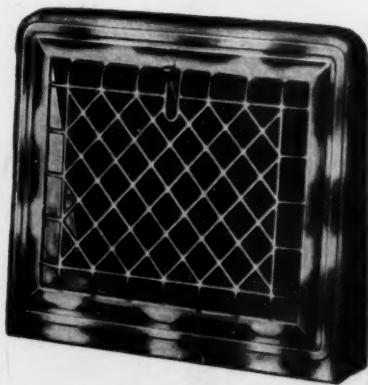
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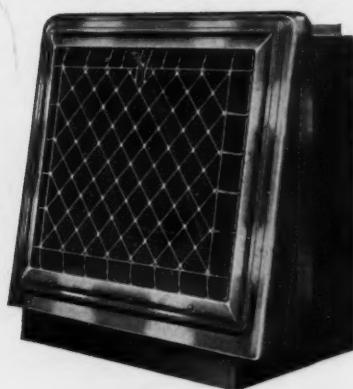
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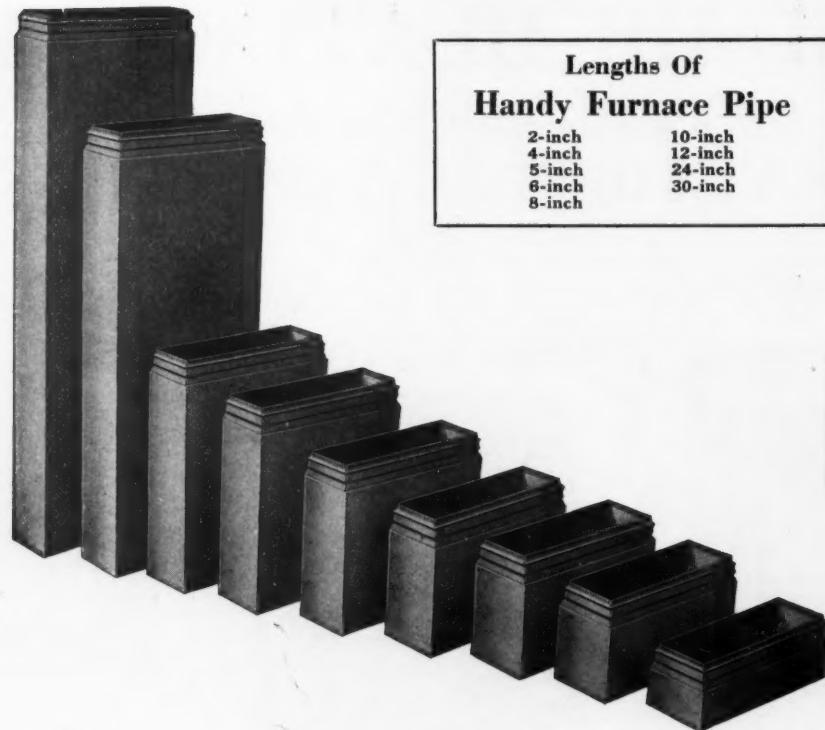
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INDEX PAGES—8 and 56

[VOL. 100, No. 3—\$2.00 PER YEAR]

BUYERS' DIRECTORY—52 and 54



**Lengths Of  
Handy Furnace Pipe**

2-inch	10-inch
4-inch	12-inch
5-inch	24-inch
6-inch	30-inch
8-inch	

# THIS YEAR (MORE THAN EVER BEFORE)

with several things — other than price — to be considered — and with the ultimate success of your furnace business greatly determined by the pipe you use — it is very true that

**“The Handy Pipe People Are a  
Mighty Good Bunch to Tie to”**

*(The man who first said that, several years ago,  
still feels as he did then!)*

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So Writes a Sheet Metal Contractor\*



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"Like most sheet metal contractors, I am essentially a mechanic. I know how to hang a gutter; I can design and install a warm air heating system. I can turn out one of the best skylight jobs in the country.

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"I was usually busy, week in and week out, and when it got to the end of the year, I seldom had any money.

"Then, a few months ago, the secretary of my local Association told me about the cost-finding system that the Trade Associations Service Company had designed for

sheet metal contractors. He showed me how easy it was to operate; how it would enable me to keep accurate records of every job; how it would tell me, when the job was completed, whether I made money or not.

"It only takes me a few minutes a day to enter the necessary figures in this simple system, yet I am making money now when I never could before. I think every sheet metal contractor in the United States should have one of these systems. He will more than save the very modest installation cost for himself the first week."

\*Name on request.



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We have prepared a little booklet that will explain in detail the system of which this man speaks. It is called "A Sure Way for a Sheet Metal Contractor to Make More Money." You may have your copy today by sending in the coupon.

Or better yet, see your local secretary, whether you are a member of the organization or not. He will be glad to explain to you in detail just how much this system can do for you.

### TRADE ASSOCIATION SERVICE COMPANY

Law and Finance Building,  
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Date.....

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Name.....

Address.....

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**Founded 1880**

# American Artisan

THE WARM AIR HEATING AND SHEET METAL JOURNAL

Published Every Other Monday

Covering All Activities IN

Gravity Warm Air Heating  
Forced Warm Air Heating  
Sheet Metal Contracting  
Air Conditioning  
Industrial Roofing  
Merchandising  
Ventilating

Beginning with this issue, Platte Overton outlines a series on the principles of mechanically circulated heating and ventilating which we feel is going to be one of the best series of articles we have yet published. Read this introduction and see what he is going to talk about.

We are mighty sorry, but the last article in G. A. Voorhees' series on Fan Fundamentals, which we said would be published in this issue, had to be held up at the last minute. If you will be patient until next issue we will give you this article. After that begins his second series which we anticipate will be even better than the first.

You fellows who do roofing work will be interested in the article telling about the heavy roof put on the Detroit Municipal Airport. This important building had to be permanently protected by the best possible roof. The work was done by one of our readers.

YEARLY SUBSCRIPTION PRICE:	
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VOL. 100, NO. 3

FEBRUARY 2, 1931

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# Are Your Registers A Mere Accessory?

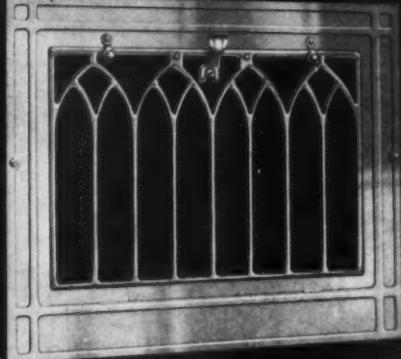
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## A POWERFUL ASSET!

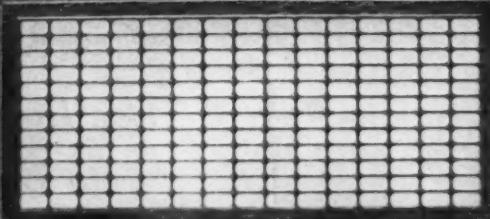
HOW about the registers you are handling? Are they mere accessories to your furnace jobs, or do they really help you in making sales? If they are just ordinary, then of course they are mere accessories without a sales help in a carload. But why fuss around with them when it has been demonstrated time without end that the outstanding superiorities of H & C registers constitute a powerful selling help to every furnace dealer who talks them to his prospects.

Don't let this year be another in which registers are merely accessories to your furnace jobs. Standardize on H & C registers and talk them. You'll find, as hundreds of other dealers have, that it pays in wonderful fashion.

Let the H & C jobber in your town have your season's requirements now so that he can maintain complete stocks for immediate delivery throughout the year.



No. 110 Baseboard Register. Captivating beauty, exceptional air capacity, and careful finished workmanship combine to make this one of the leaders in the broad H & C line which contains a style and type of register best suited to every purpose.



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Volume 100

# American Artisan

THE WARM AIR HEATING  
AND SHEET METAL JOURNAL

Number 3

## Not Volume—But Profit!

THE warm air heating industry is beginning to realize that mere volume is no indication of large net profits.

It has taken the industry a long time to establish this truth, but there now seems to be quite a number of contractors who have proved this assertion from their own books.

Probably the hard times of 1930 had a lot to do with establishing this truth. During that period contractors all over the country were faced with the situation of decreased sales so far as number of installations was concerned, but also faced with the necessity of making a certain amount of profit in order to keep in business.

The result of that necessity was that these contractors got out and did everything reasonable to make every sale as profitable as possible. To their surprise, they found that increased profit on an ordinary sale was not an impossibility, but really easy.

In casting around for ways and means to raise the profits in the face of decreased sales, they discovered that the average home owner could be interested in such things as automatic controls for his heating plant so that he could lie in bed in the morning and save on his fuel bill. The contractors found that the home owner was usually tired of putting water in the humidity pan morning or night and could be sold a gadget whereby the pressure from the city main did all this work for him.

Both these small accessories could be sold at reasonable figures, but carried such a nice margin of profit that their sale was well worth while.

It was only natural, then, that any contractor who suddenly found he could sell accessories immediately became interested in the possibility of selling larger and more expensive adjuncts to present heating plants. This aroused interest in such accessories as fans and blowers, air washers, oil burners and stokers, etc.

With the burners and stokers the contractor found himself in direct competition with experienced salesmen who were adept in all ways to get the prospect to sign on the dotted line.

In most cases the heating man was not this type of a salesman. But he did have a lot of heating experience to fall back on and where the high pressure sales-

man could only sell his special unit, the heating man could go down into the basement, look the heating plant over and tell the owner what should be done before he spent all the money required for a specialty which might not work after it was installed.

So these contractors discovered that the best way for them to sell was as heating engineers recommending certain changes in order to make the plant modern in operation. While they did not sell as many units, perhaps, as the high pressure salesmen, what they did sell stuck.

This selling of high priced units quite naturally led the heating man to try wherever possible to revamp the old layout so that when all the appliances were installed, the plant would be as efficient as modern design and engineering can develop. Using the standard code and advanced engineering as bases, these contractors found that remodeling work carried a splendid margin of profit and that to the remodeled plant a whole list of accessories might be added to bring the plant up to date.

Every such addition increased the profit.

These contractors are not super-men. They are to be found in most communities. Strange to say, for most of these men 1930 was a good year. For instance, one such heating man in Ohio sold just one-half the number of installations in 1930 as he did in 1929, but his profits were more than twice those of 1929! Another contractor up in Minnesota dragged along for years making a bare living, while oil burner men all around him made money, but lost profits because of poor heating plants. This heating man began to install burners after he had overhauled the plant and modernized it and in 1930 his net profits were more than his gross profits of the preceding three years.

Still another contractor in the east changed his selling plan from the sale of a large number of low priced installations at a net profit of \$10.00 per installation to a few high priced installations each with a net profit equal to the gross sale of five of his previous jobs.

The point is that volume should be forgotten. The thing every heating man ought to be interested in is profit. Every sale should be made so that as much profit as possible is included.



The exterior of the handsome building

ONE of the most interesting architectural aluminum jobs of 1930 is the Genesee Valley Trust Building completed late last year in Rochester, New York. The striking feature of this tall office building is the Wings of Progress which adorn the top of the central tower.

This unusual architectural feature is unquestionably an integral part of the motif of the building, yet the wings are distinctive enough to mark the building as an interesting departure in architectural adornment.

From our point of view this

building emphasizes again the fact that with 1930 a very definite trend toward the architectural use of exterior metal has become established.

The building proper is of rather severe design, built of stone with wide and heavy piers between windows and high spandrels under all windows. Few decorative features mark the exterior, the architects depending upon the wings to supply all the adornment necessary.

The metal work on this building is varied and of large tonnage. In the metal work are included cast aluminum, sheet aluminum and extruded aluminum in a variety of

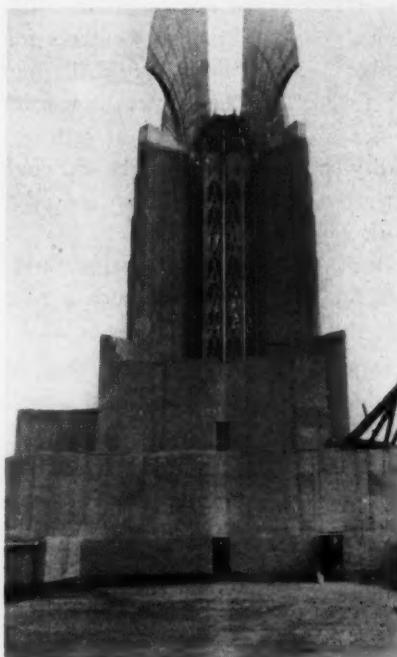
## Aluminum- Embellishes

forms, weights and finishes.

The sheet metal contractor for all the sheet work was Barker and Beikerch of Rochester. This contractor also furnished the labor for erecting the cast aluminum members of the group. The cast work was done by the Francis Metal Door and Window Corporation, also of Rochester. The architects were Voorhees, Gmelin and Walker of New York City with Carl C. Ade of Rochester as associate.

Of course the most impressive member of the metal group are the four gigantic wings which stand at right angles to one another. These huge wings are of cast aluminum although it was at first intended that they should be of sheets. It was found that formation in sheets was not practical so casting was used.

Each of these wings is composed of several sections which were

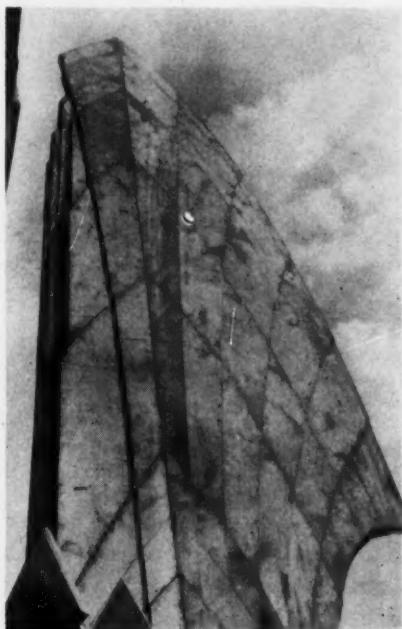


This is the back side of the tower. The grilles and reflectors are identical on all four sides. The buttresses are of stone

# Cast, Sheet, Extruded Genesee Valley Trust Building

bolted together on the job. Each wing weighs 7,000 pounds and is supported on a structural iron frame which extends throughout the height of the wing. The wing was assembled from the base up, as much of the weight of the aluminum rests on the aluminum itself and not on the structural frame.

One of the illustrations shows a view looking into the open base of



One of the cast aluminum wings as the tip appears from the reflector platform. The topmost portion is one complete casting forming a cap for the wing

one of the wings. The structural frame is a plate and angle column with channels riveted to the sides and extended out to hold the bolts from the aluminum sections.

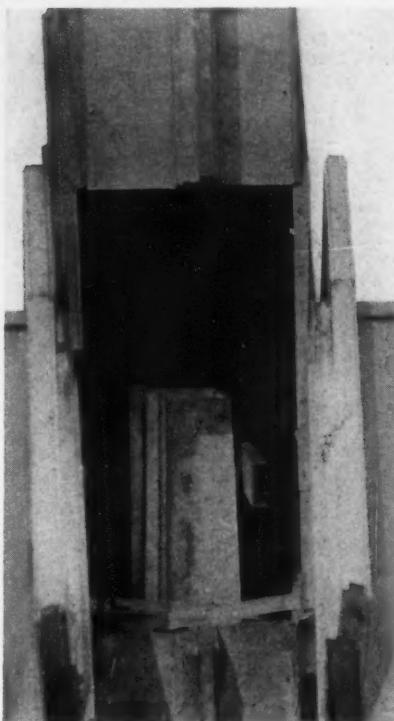
Another view shows how the back side of the wing is closed by a cast plate which is bolted to the edges of the wing sides. Just as a matter of interest the top section of the wings which has both sides and both edges all cast as a solid cap was placed in position by using a

gin pole erected in the center of the tower. The wings are each 42 feet high and 56 inches wide at the bottom and 10 inches thick at the tip.

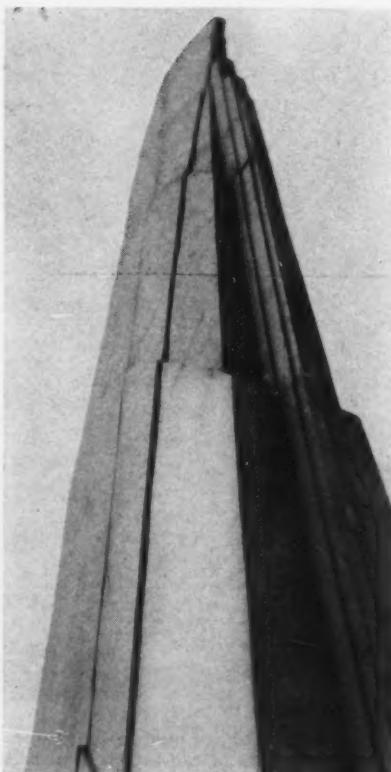
The architect prepared a drawing of the wing as he wanted and this drawing was reproduced in a sectional wood mold on which the aluminum was cast.

The other cast portion of the work consists of ornamental aluminum panels which are placed between each of the corner buttresses. This grille work is of elaborate design and of so delicate a casting that the utmost care had to be taken in erecting the sections. These grilles are composed of sections which were assembled and bolted together on the job.

As can be seen in one of the illustrations the design of the grille



The bottom of one of the wings showing the interior structural frame. The wing supports itself, however, each section resting on the one below. The base is 56 inches across



Looking up the back side of a wing. Three sections show. The back plate is bolted to the edges of the other sections. The wing was erected from the bottom up, each section supported on the one below

is an arc shaped triangle with the pattern repeated one section after another all up the grille. Each section is topped by a solid shield plate of ornate design.

The sections of this grille work are supported on the structural frame which forms the tower. These grilles are not self-supporting as are the wings, but depend for support and strength on the frame work behind them.

There is a wealth of interesting sheet work throughout the tower. Between the sections of the grille there is a sheet mullion which begins below the level of the roof parapet and extends to the very top of the grille where it is embellished



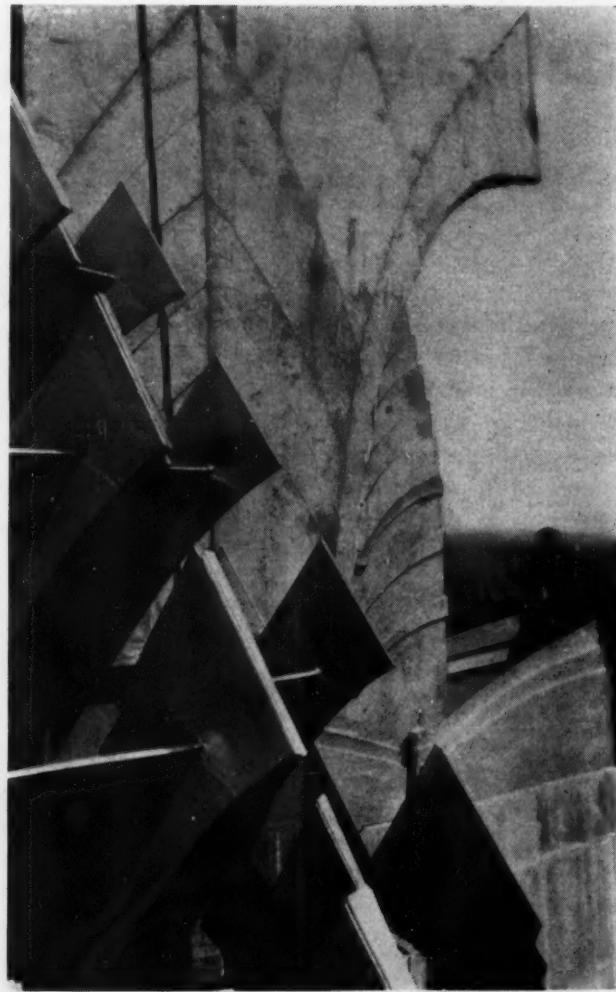
This is the top of one of the grilles. The grilles are cast aluminum as is the top section which is shield shaped. These grilles weigh 1200 pounds for a complete grille of four panels. The fin beside the grille is sheet aluminum formed and welded in the shop. Below is one of the extended mullions of sheet aluminum

with a wing shaped top section of three contours.

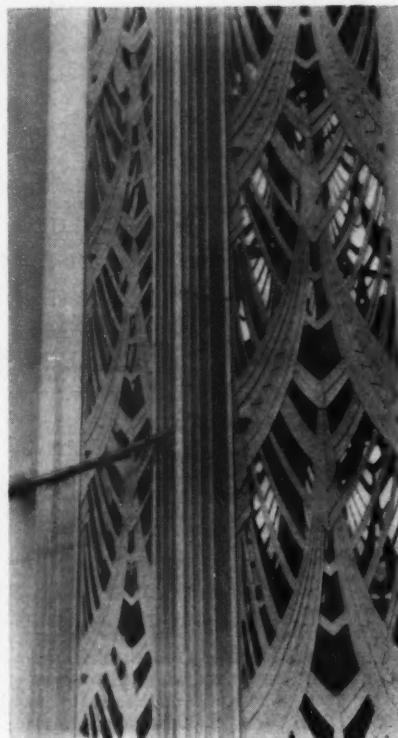
The sections of these mullions were formed up in the shop and welded together before assembly. The welded sections were shipped to the job in as long a length as practical and assembled on the roof. There was no welding or soldering work done on the job as each section was formed to be assembled with the adjoining section by a flat locked seam.

The mullions are of satin finish while the panels of the grille are dull. The contrast between the two finishes of the same metal is pleasing and affords enough contrast to emphasize the delicate design and handwork of the patterns.

The design of the tower calls for flood lighting of the wings. The



This shows the reflector panels sloping up between the fins which cut the light from the lamps into intricate ribbons. The reflector panels are 10 gauge aluminum, while the fins are 16 gauge. Each fin and panel is a complete unit formed and welded in the shop. All the erection required was to bolt the units together



flood lights are placed at the top of the grilles but behind below the top. In order to keep the lights from sweeping upward in unbroken shafts of light there is a special reflector section made of sheet aluminum set behind the top of the grille, but extending out and upward enough to be visible from the street. Because of this visibility, it was, of course, necessary to make the reflector panels a part of the decorative part of the tower.

Two of the pictures show the design and construction of aluminum reflectors. The reflecting surfaces are flat panels of aluminum slanted upward at an angle of about 75 degrees. These panels are set so that each panel recedes from the panel below about the depth of the panel proper.

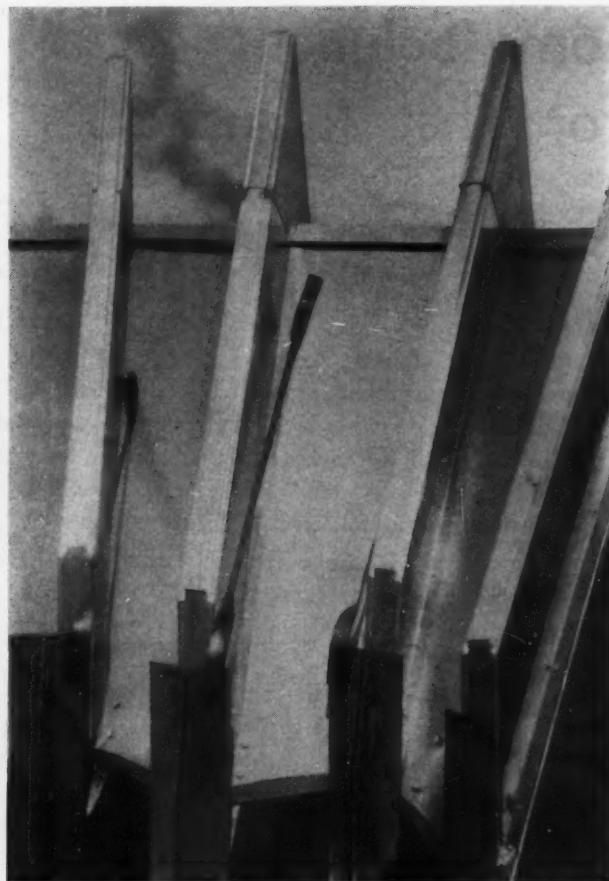
To give architectural prominence to these reflectors each panel is set between verticle Roman wings or fins as shown in one of the pictures. These wings were formed and welded in the shop and shipped as a whole wing to the job. The reflecting panels are bolted to these wings so that there was no need for welding on the job. The reflecting panels are of 10 gauge metal while the fins are of 16 gauge metal.

These fins are supported at the back on angles iron frames which are a part of the structural frame.

The flood lights are to be placed on iron grilles at the base of the reflectors so that the streams of light will be thrown upward to be deflected by the slanting panels, but cut into ribbons by the verticle fins.

This interesting building illustrates how architects are turning to metal for the color and tone and ductility so necessary to do the kind of ornamentation desired today.

The back side of a reflector section. The fins were formed and welded in the shop and joined with flat locked seams on the job. The reflector panels are bolted to the fins



## Take Care of Your Tools!

ONE of the small leaks which amounts to considerable money if permitted to bloom unattended is the loss and misuse of tools. Tools represent money and a three dollar pair of snips lost be-

ture of a like amount for another pair.

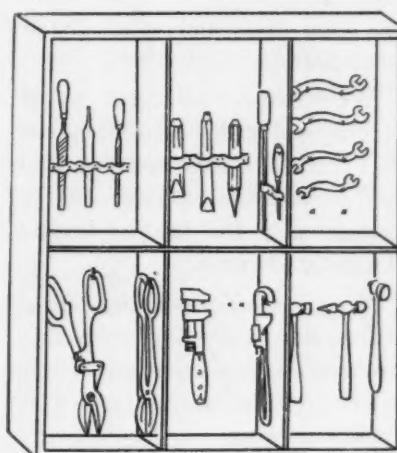
One of the easiest ways to keep tab on your small hand tools, especially those used in the shop is to have a definite place for each tool. Of course this idea is not new, but it is always worth calling attention to. Most of us probably keep such tools in a drawer of the bench, or on a shelf or just on top of the bench.

It is just as easy to keep that tool on a pair of hooks on a tool board or in a wall cabinet. And by keeping the tools so it is easy to look over the board or rack each night and tell at a glance how many tools are mislaid.

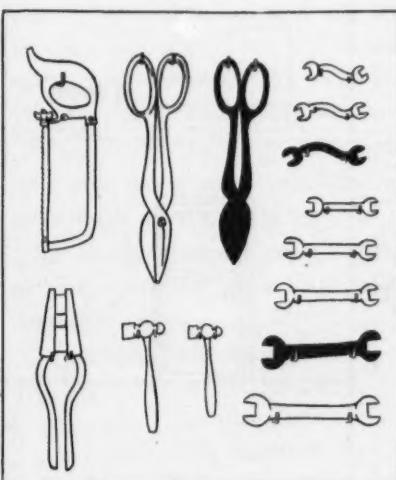
The illustrations show a practical wall board which one contractor uses above every bench. When he has several men working each man has his own board.

This same contractor built the

open cabinet as an experiment and now finds the men like the idea. Each tool has its own place and it is easy to put the tool in place.



These racks can be built of 1-inch lumber or better yet let one of the men make them out of metal. All you need is a few scraps from some sheets and a small amount of angle iron.



hind the work-bench or left out in the truck means not only the cost of the lost snips, but an expendi-

## Some Solutions For That August 30

# CHIMNEY DRAFT TROUBLE

**I**N the August 30 issue we gave the details for a trouble problem which had to do with lack of draft in a pair of furnaces connected into a common flue. The problem briefly was as follows:

The two furnaces heat a two-family building. Both furnaces connect into one flue, which is 8 by 8 inches inside dimensions. (We made a mistake in stating the size and said the flue was 8 by 8 inches outside dimensions. Most of the readers caught this error.) The chimney is of fire brick in sound masonry. Hoods from gas stoves, one on the first floor and one on the second floor, also exhaust into this one flue. There is no damper in the hood pipes. Whenever a furnace is fired smoke travels up the flue and out of the hood pipes.

Also, and this is the most peculiar situation, when there is a good draft in one furnace there is almost no draft in the second. But the furnaces alternate as to which one has the good draft and which has the poor draft.

We invited solutions to the trouble and called attention to the fact that a two-issue series on chimney construction and size was just completed in the July 19 issue of AMERICAN ARTISAN.

We expected answers and we got them. Practically all of the answers are identical in analysis and solution offered. Here are a few of the typical answers:

Sept. 8, 1930.

AMERICAN ARTISAN,  
Chicago, Ill.

The writer has read your article appearing in the August 30th issue and has studied the diagram care-

fully. I would answer your question as follows:

First—the flue is too small to carry the load of two 24-inch furnaces to say nothing about the two stove hoods.

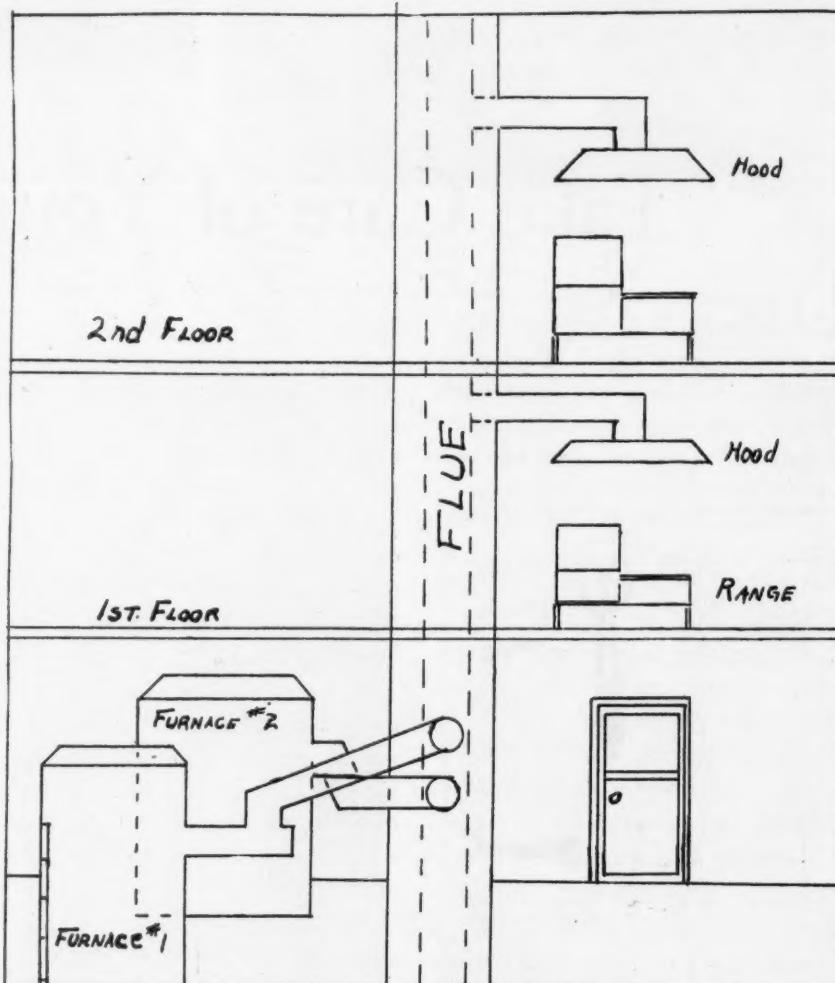
Since you have asked for a remedy I will make a few suggestions that will improve conditions a great deal.

In order to equalize the draft on each furnace, they should be connected into the flue with a 9 x 9 x

12 Y. This will increase the volume of draft at the entrance to the flue.

It would also be advisable to place dampers in the hood pipes and set them at not more than 20 degrees open. There should also be a down tilt to the flue.

While it is out of my line answering articles to be published, I could not resist this one for the simple reason that we have so many so-called furnace dealers who are so anxious to sell a job that they would



This is the arrangement of the furnaces and the kitchen stoves. The hoods connect into the same flue with the two furnaces. The two furnaces won't draw equally at the same time. Smoke also drives into the kitchen. How would you remedy this situation?

hook a smoke pipe to a door sill if they could get away with it.

I cannot believe that this plant was sold and installed by any dealer that had studied the Standard Code or spent any time trying to become the leading heating dealer in his locality.

Yours very truly,  
H. C. TRABIE,  
Logansport, Ind.

Here is another solution which also says the flue is much too small, but goes a little deeper into the problem and offers some practical suggestions to overcome the trouble. This solution reads as follows:

Sept. 6th, 1930.

THE AMERICAN ARTISAN,  
Chicago, Ill.

Gentlemen:

This problem is a very simple one.

The chimney is just about large enough for one furnace.

First one gets hot and draws ahead of the colder one. Then when the over-balance takes place the other furnace uses practically the entire capacity of flue at the expense of the other furnace.

The two ranges alone need the 49 sq. in. of flue. You have not got more than 49 inches in an 8 x 8 tile, as it is about 7 x 7 in. inside.

If this job would be just right, build two more flues—one for second furnace and one for ranges.

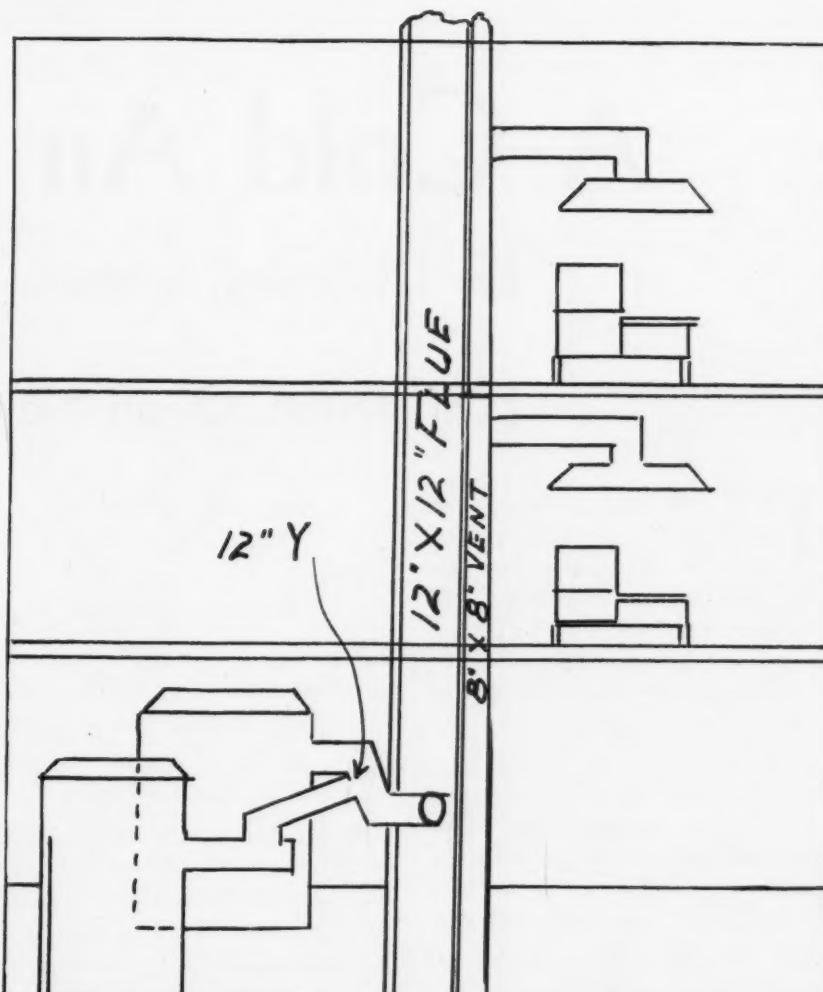
If this is too expensive, disconnect ranges from flue and run one or two Number 7½ tin double safety wall stacks through walls and vent ranges through these stacks.

I would run this vent through the roof and put a small ventilator on the outside of the building.

This is the cheapest, practical way to make both furnaces and ranges operate.

Respectfully submitted,  
C. M. BULLER,  
Heating Engineer,  
2128 Medford Ave.,  
Milwaukee, Wis.

Here is a letter which is accompanied by a sketch showing a similar solution to Mr. Buller's, but sug-



This is the revised layout submitted by O. M. Dodd. The range hoods exhaust through a separate stack. The furnaces are hooked into a common Y into the flue. Mr. Dodd explains the operation of this in his letter

gesting a more radical change. It says:

Sept. 1, 1930.  
THE AMERICAN ARTISAN,  
Chicago, Ill.

Dear Sir:

In regard to Eugene Gissinger, Wauwatosa, Wisconsin, problem, there is only one sure way to correct this trouble. That is to build a new chimney, large enough to take care of the furnaces and to build in the same stack a flue for the vent pipes for the ranges. In other words, build a double flue and bring the smoke pipes from the furnaces into a Y-joint going into the flue with a 12- or 14-inch thimble.

You state the flue is 8 x 8 on the outside. According to your statement there be no opening on the inside. I take this as a slip and you mean 8 x 8 on the inside, which

perhaps would have all it could do to handle one furnace.

Very truly yours,  
O. M. DODD.

The shortest solution offered would not try to overcome the trouble with any half-way measures. The author says:

"This problem is easy. What will have to be done is to construct two new flues, each 8 by 12-inch inside dimensions, and all will be well. I suggest the contractor look up the flue requirements given in the Standard Code."

Reliance Heating Company,  
220 East Second St.,  
Cincinnati, Ohio.

Here is another interesting letter which came in. It is from away down in Texas. A very practical

(Continued on page 22)

# A Cold Air Boot

For I. G. Riley, Spokane, Wash.

and

L. H. Barrett, Olean, New York

THE following problem was submitted by one artisan from Spokane, Washington, and another from Olean, New York. It is worked out here with *no allowances for laps and seams*.

First draw the center line of the collar B. Upon this line draw the profile A. Upon the profile step off the twelve spaces and number as shown. Complete B and draw the lines from the division points on the profile to the miter line 1n-7n. Now complete the elevation view. The rectangular opening of course joins on to the furnace. Drop a line from x of indefinite length, and a suitable distance from the elevation draw a horizontal center line rs of indefinite length. Upon the vertical center line of the plan view step off the distances c to b, b to a, and a to 7 found on profile A, on each side of the center line, and draw horizontal lines of indefinite length through each of these points.

Next drop lines from the points 7', 8', 9', etc., found on part B so as to intersect points of like number on the horizontal lines just drawn, and through these points draw the ellipse representing the round opening. In a like manner draw the ellipse representing the line of intersection of B and C after dropping lines from 1n, 2n, 3n, etc. Draw the vertical line a-a', b-b', representing the line of intersection of the transition piece and the rectangular part which is joined to the furnace. The distance a-a' on the plan is of course equal to the desired length of the opening into the

**By L. F. HYATT**  
*Contributing Editor*

furnace. A radius equal to the radius of the furnace is used to draw the arc m-n. Draw lines from the corners a-a' and b-b' to 1', 2', 3', 4', etc., as shown on the plan view of the drawing. It is now possible to determine the true length of the lines from 2n-3n and 4n found on the elevation and letter the points of intersection with the horizontal line at the bottom 2n', 3n and 4n'.

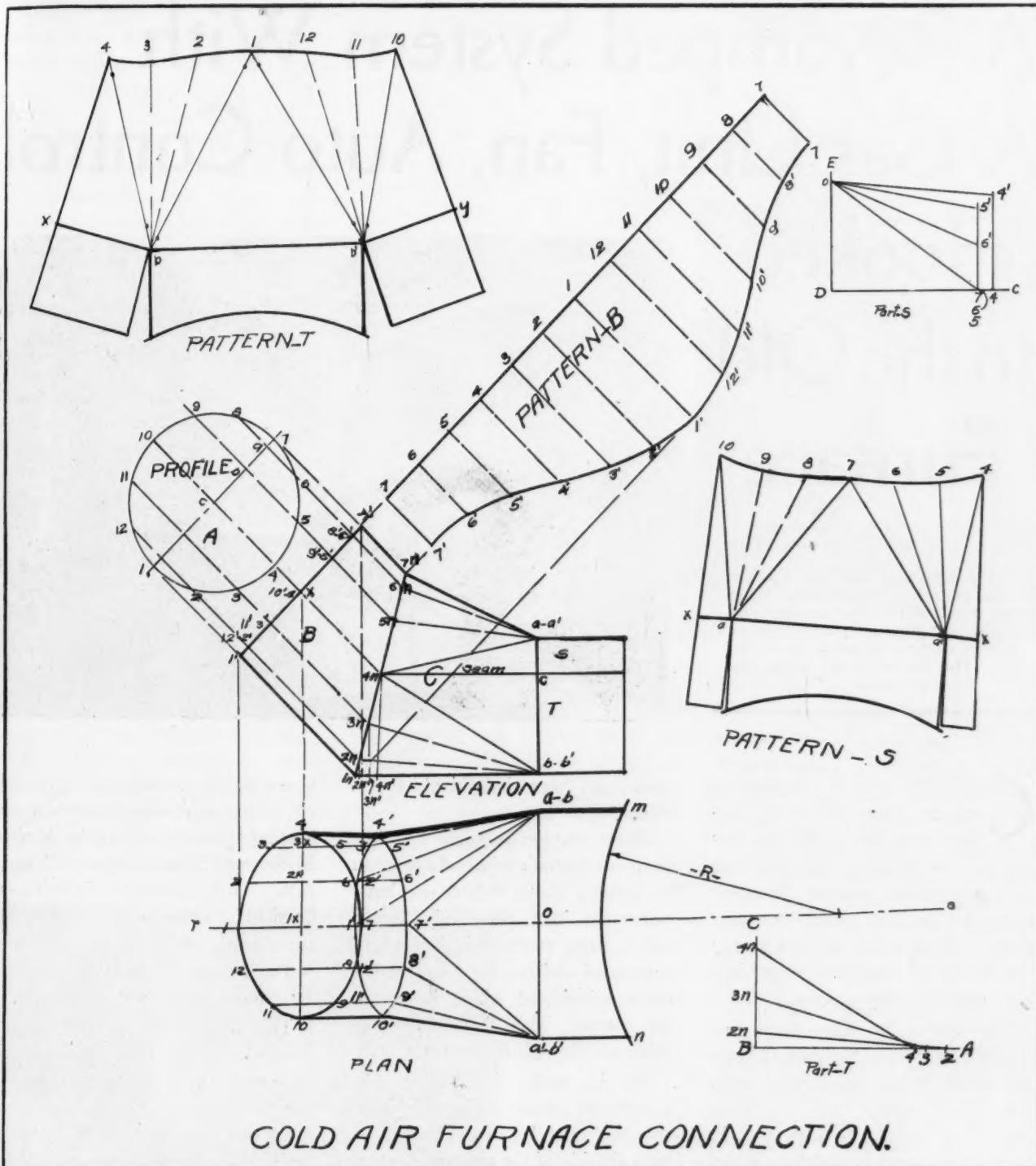
Now draw the angle A-B-C for the true length lines of part T. From point B on the line BA step off the distances 2' to a-b, 3' to a-b and 4' to a-b found on the plan and number them 4, 3, 2 as shown on the diagram for part T. Now from the elevation take the distances 4n to 4n', 3n to 3n' and 2n to 2n' and step them off on the vertical line BC on part T. Connect these points with the points on the horizontal line as shown, 7 to 8, on the plan is of course a true length line.

The method of finding the true length of the lines of the upper part of the transition piece is slightly different. Draw the angle C, D, E in part S and upon the line DE step off the distance a-o found on the plan. Take the distance 7n-a found on the elevation and step it off on line DC. Connect this point with o on the vertical line. Next take the distance a-6n and step it off on the line D-C. From point 6 erect a perpendicular line and upon

this line step off the distance 1x to 2x found on the plan. Connect this point with o as shown. Next take the distance 5n-a and step it off on the line D-C. It so happens that this point is at the same place as 7 was, so on the vertical line step off the distance 1x to 3x found on the plan as before, locating point 5, and again connect this point with o. The distance 4n-a is stepped off on line D-C and a perpendicular is drawn from point 4. Next the distance 1x-4 is stepped off on this line and a line is drawn from this point to o. This completes the true length of all fore-shortened line.

First develop the pattern for part B. Begin by drawing the stretch-out line an indefinite length. Upon this line step off and number the equal spaces found on profile A, as shown. Next, from each of these numbers and at right angles to this line draw lines of indefinite length. Now draw lines parallel to the stretchout line from the points 1n, 2n, 3n, etc., found at the intersection of parts B and C. Then through the points of intersection of these lines and the lines previously drawn at right angles to the stretchout line draw the curved line, thus completing pattern B.

Next draw the pattern for T. Begin by drawing the line b-b'. With the distance 1 to b found on the plan, and b and b' as centers strike arcs intersecting each other and locating point 1 on the pattern. Now from part T take the distance 2n to 2 and with the b and b' as centers strike arcs of indefinite length. Then with the distance 1'



to 2' found on pattern B, and 1 on the pattern as a center, strike an arc intersecting the arc just drawn and locating point 2 on the pattern. Continue with the other points 3n to 3 and 4n to 4 on part T. When these lines are used, up to and including 4-b and 10-b', take the distance 4' to a found on the plan and with 4 and 10 on pattern T as centers strike arcs of indefinite length. Now draw lines at right angles to the lines x-b, b-b' and b-y, intersecting the arcs just drawn. Connect these points. The curved line on pattern T is drawn with the

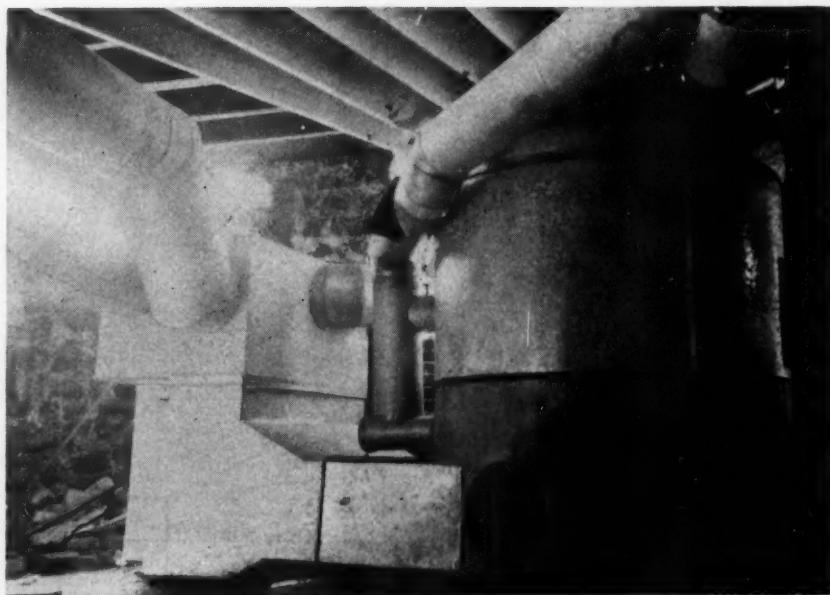
b' on pattern T as centers strike arcs intersecting the arcs just drawn, locating x and y. This completes the triangle of the transition part of the pattern. With the distance a-m found on the plan and points b, b', x and y as centers strike arcs of indefinite length. Now draw lines at right angles to the lines x-b, b-b' and b-y, intersecting the arcs just drawn. Connect these points. The curved line on pattern T is drawn with the

radius used in drawing the plan. This completes pattern T.

To begin pattern S first draw the line a-a'. Take the distance o-7 from the group of true length lines, part S, and with a and a' as centers strike arcs intersecting each other at 7. Continue as with pattern T. The distance from a to x on pattern S is of course taken from c to a-a' found on the elevation view. No allowances for seams or laps have been made on patterns.

# A Revamped System With A Gas Unit, Fan, Auto Control Hooked to the Old Furnace

The old furnace was put inside a new casing. Twenty-three leads are taken off the new bonnet. The return air system converges at a special cold air housing above the fan. The louvre works inside the shoe



**C**ONTRACTORS throughout eastern cities and New England have, during the last few years, been aggressively following the remodeling market in their quest for heating prospects, especially in those cities where a steady conversion of large old homes into apartments is taking place.

Throughout the East there is a steadily increasing number of large old homes being transformed from one family houses into two, three and four family apartments. In most cases some remodeling is being done on the exterior, but most of the changes are made in the inside.

In changing over it is, of course, necessary to cut down the large rooms, making two and sometimes more rooms out of one old one. This change takes place all through the house, so that where the old shell housed perhaps eight, ten, or twelve rooms, all more or less opening into others, the remodeled interior may contain fifteen, eighteen or twenty rooms divided into two,

three or more individual apartments.

These changes in room arrangement necessitate vital changes in the heating plant. Where one large warm air inlet previously served for a large room, this has to be eliminated and two or more smaller inlets substituted when the rooms are cut up. This change must be made all through the house.

At the same time, other and oftentimes even more radical changes must be made in the return air side of the system. Cutting down room size means that open sweeps where air used to move freely are eliminated and in place of these spaces are small rooms, many partition walls, more windows, and considerably lessened chance for air circulation except in individual rooms.

To meet this situation, it is frequently necessary to add several return air ducts and rearrange the entire cold side of the plant.

A good example of this type of remodeling work is the job illus-

trated by the picture with this article. The remodeling work on the heating system was done by Martin Fisher and Sons Company of Buffalo. This particular installation entailed a complete overhauling of the heating plant, an entirely new warm air setup, and considerable revamping on the return air side.

The house was a large single family dwelling. It has been altered to provide three apartments, one on the first floor, one on the second floor, and a smaller one on the third floor. All apartments are served by one common hall at the front door. The alteration work included covering the old clapboards with shingles over insulating material, which added considerably to the weather-tightness and lowered the heat loss of the house.

The old furnace, a Kelsey 30-inch firepot, had been in use for some ten years, but was in excellent condition and so was housed in a new casing and shifted slightly on the foundation.

In planning the remodeling the

owner desired to provide a heating plant which would minimize labor and attention and at the same time insure an adequate supply of heat at all times. In order to meet these requirements the Fisher company worked out plans in which firing would be taken care of by a gas unit, an Ironton unit, placed in the ashpit of the furnace.

Since the old house was to be divided into a large number of rooms the contractor recommended automatic control of the heater. This was approved by the owner. The plans worked out utilize a Minneapolis-Honeywell regulator located in the first floor living room. It was determined from experience that if temperature was maintained in this room, temperature all over the building would be adequate.

Another change was the incorporation of a forced air system. The operation of the fan is synchronized with the burner and through the use of a bonnet control also operates so long as there is heat in the casing.

From the new bonnet, 23 warm air leaders are taken. There are so many that the leads come off the bonnet side by side all the way round the furnace. With but two

The exterior of the old home was covered with a layer of insulating material and then finished in shingle. But the big share of the alterations were done on the inside. This is true of practically all remodeling jobs



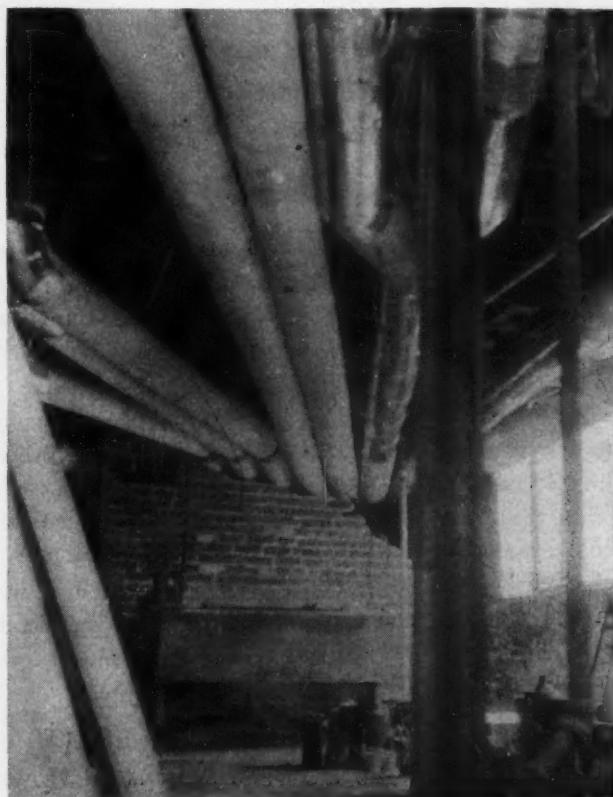
exceptions all these pipes are of the same size, 8 inch. All of the pipes are covered with asbestos paper for appearance. It will be noticed in the illustrations that all these leads, even the long ones which come through the wall and traverse the length of the basement, are prac-

tically flat from end to end.

In order to get the warm air through these long runs the contractor turned to forced air as the quickest and most practical means of heating the house. One of the pictures shows the cold air side of the installation before the fan had been placed in its housing and before the cold air housing and connection had been leveled up for operation.

All the cold air pipes dump into one large rectangular box located above the fan. The fan is enclosed in a special housing which is only as much deeper than the blades as necessary to get the right amount of air through the fan.

Ahead of the fan housing there is a square box which carries within it a large horizontal damper. This damper is hinged on the sides of the housing. One of the sketches shows how this damper works. When the fan is running the force of the air lifts the forward edge up against the housing and at the same time closes the back edge on a special shelf which is padded with felt. The damper in this position shuts out all air coming down ahead of the fan and also prevents air



Because of the new interior arrangement some of the leaders are 30 and more feet long. To insure a plentiful volume of warm air in all rooms the revised system goes to forced air. Here are a few of the leaders to the back of the house

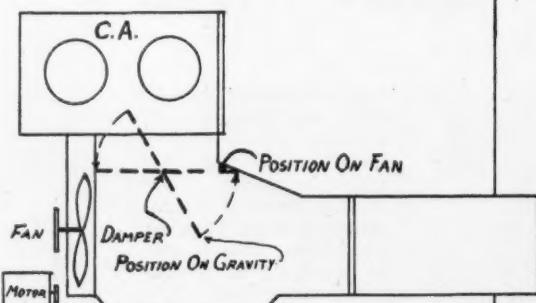
blowing back into the return air box.

When the plant is operating on gravity the weight of the cold air pushes the forward edge of the damper down and allows the returning air to flow down both sides of the damper and on into the casing. A few drops of solder on the edges of the damper serve to balance it so that just a slight difference in the weight of the air moves it open or shut.

All the return air pipes to the cold air box are round pipe like the leaders of the warm air side. In addition to recirculating the air inside the house, a small pipe connects directly with the outside. This pipe has a capacity equal to 10 per cent of the air used in the system. A filter is provided for this pipe.

The total of warm air taken off the furnace is 1000 inches. The capacity of the furnace is 1200 inches. The fan used delivers 3000 CFM operating at 800 revolutions per minute. The fan is an 8-bladed Buffalo Forge company propellor type and is bolted to the concrete floor without any connection with the return air housing. The motor is mounted outside the housing in order to avoid all possible fan or mo-

This is the arrangement of fan, housing and louvre. When working on gravity practically all area is available for air flow. When the fan goes on the louvre lifts and closes the gravity opening



tor noise.

All the warm air pipes discharge through baseboard registers. The return air is taken out of the living rooms through baseboard registers from which the valves had been removed.

Most of the return air from each apartment is taken out of the living rooms. Additional air is taken out of each hall and one large floor grille is located in the first floor hall at the bottom of the stairs from the second and third floors.

So far as the Fisher company is concerned this excellent installation is typical of the kind of work which by aggressive salesmanship means

a profit on the new stack work, on the fan and its installation, on the automatic control, on the gas heating unit and on new registers and grilles. It is because all these units are figured into the job that remodeling work is eagerly sought out.

In addition the owner in most instances is ready to hear the story of comfort and convenience for he must supply these if he hopes to get and keep tenants. Unlike the speculative builder or the home owner pressed for money the remodeling owner must consider the future as well as the present and so makes a better prospect for the heating contractor.

## That August 30 Draft Problem

(Continued from page 17)

way to test out operation of the furnaces is suggested. It says:

Paducah, Texas,  
Sept. 3rd, 1930.

AMERICAN ARTISAN,  
Chicago, Ill.

Dear Sir:

I was just noticing your flue puzzle on page 42 of August 30th AMERICAN ARTISAN. I would like to comment on this problem.

I would say that in the first place someone made a very costly mistake. I note from your measurements that the flue is 8 inches in

diameter, outside, which cannot be over 7 inches inside.

Now the flue has got two 6-inch smoke pipes and two hood vents run into a 7-inch pipe. What else could one expect, but all kinds of trouble as long as the flue is not changed?

In order to find out if the size has anything to do with the drawing, disconnect one smoke pipe from the flue entirely and close hole in flue up tight. Then fire for possibly a week, note the difference, then reverse operation. If you find the flue to be too small, which I am sure is the case, there is only one remedy and that is to tear down

and rebuild and put two separate fire-clay tile inside and connect one smoke pipe and one hood to one flue. Then you will have no trouble.

There is a possibility the top of flue is not high enough, not finished right, or some wind obstruction is close to the top of flue. One can be their own judge about that.

I would like to hear from someone else on this puzzle as we all can learn and never get too old.

Yours very truly,

G. C. FITZGERALD,  
Fitzgerald Sheet Metal Works.

# FAN BLAST ENGINEERING

By PLATTE OVERTON  
Heating Engineer

**T**O the sheet metal contractor doing warm air gravity or fan blast heating and ventilating the science pertaining to this industry should be of vital interest.

It is only in recent years that steps have been taken to assure the contractor that exact data could be obtained to assist him in the calculations of heater sizes, pipe areas, etc. The Standard Code filled the long felt want of a simplified method to assist in the calculations of these important items.

In the following articles it will be noted that the B.t.u. method of calculating heat losses is used. This differs only with the code in that the code uses simple factors by which the various exposed surfaces are measured or calculated in square feet and multiplied by these factors to arrive at the square inches of pipe area from the heater.

In general it is assumed by the code that there is little or no variation from the standard type of construction for residences and that there will be little or no variation of the flow of warm air in warm air pipes from the tests made at Urbana.

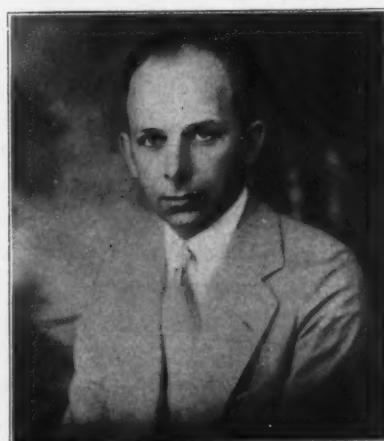
To date the code is the most practical and condensed method of simplified calculations for the requirements known to the science of heating by gravity warm air.

While it is possible to establish factors by which one might estimate the requirements for a fan blast warm air system, by the use of the Standard Code and multiply the square inches of pipe area as required by this factor to find the required duct area for the mechanical system we plan for these articles to eliminate the Standard Code and use the straight B.t.u. method.

It is well to state at this time

that the term "forced air heating" will not be used by the writer of these articles. The system will be termed mechanical, or fan blast system.

The writer is firmly convinced that there is no such "animal" as



Platte Overton

a combined gravity and mechanical system and while some heated air will find its way up through a mechanical system to the rooms to be heated, it will be understood that all of the following articles are on straight mechanical systems where the fan must operate every minute the system is in operation to obtain the results specified, or required.

The following articles will cover: Heat loss, required c.f.m. (cubic feet per minute) to offset this heat loss, temperature of the warmed air at the inlet, duct sizes, heater size, area and height of smoke flue, air fillers, air washers, fans, motors, and temperature control. We will also take up air conditioning in general, humidity, cooling and other problems experienced in this science.

Referring back to the Standard Code we find as stated various factors that we use to determine our

pipe areas, and these factors pertain to the average residence only.

With our mechanical system we are going to heat not only residences, but factories, churches, theaters, schools, and public halls. Most of these buildings vary in construction, ceiling height, temperatures required, and air conditioning, and no factors that would cover this entire range of buildings and various construction is practical. Each one is a problem in itself and hence the reliable B.t.u. method of calculating our heat losses.

The series of articles will be, so far as possible, a course in simplified engineering. Because of the size and types of work covered, it is going to be necessary to use formulas and engineering data, but it will be the writer's endeavor to make each such item simple enough so that any good heating man can readily understand it.

The basis of this system is a set of engineering plans on which is set out each item which must be considered to get an efficient and adequate heating system.

The writer of these articles invites questions. These questions from the reader help to direct the writer in the items covered. The questions should of course pertain to mechanical systems. Questions regarding the Standard Code will be answered under another heading in this paper covering also gravity systems, "booster fans" and the so-called semi "pressure system."

The heat loss of any building under consideration is of course the first item to be investigated. With all these calculations made and out of the way we can proceed with the design of the system. We will first explain what a B.t.u. is.

# LET'S MAKE SOME MONEY

by  
BENJAMIN F. JOHN



**D**O you have a mailing list? Do you know that a good list has a book value. It is called good will.

Today, all progressive businesses have mailing lists. They spend money in building them, and a good deal of time in keeping them up to date. Many depend almost entirely upon their lists to bring and hold business.

A good mailing list is the arrow pointing to more business. Its uses are many. It is the link between the shop and the public, providing you know your story and can tell it well.

The average shop cannot afford to spend a lot of money to build a mailing list, nor is it necessary. If you have a list of your customers; the names and addresses of folks in your immediate neighborhood, and every name to whom you have sent an estimate and lost, you have a good start for the basis of a good list.

Beginning in 1900, certain shops I know in our trades built up mailing lists by sending out to their friends, neighbors and regular customers the old printed double postal card. One card solicited either roofing, metal work or heating, and the other could be torn off and returned; postage two cents. Some of these lists grew quite large, and were the source of good business for a number of years.

These old mailing lists were usually kept in blank books and consisted mostly of just the name and address. A few were in a card index system and contained in addition to the name and address, the size and character of the roof, when repaired and painted last; or the

name and size of furnace and other  
memos. (See Fig. 1.)

Perhaps because of the times or because the shop owner did not care to annoy his customers or prospects by sending the same card again, these lists were used but once a year. Strange to say no thought was given to changing the printing, because it was then assumed that one card told the whole story so why tell it over again? So these lists became rusty, yet the information on the cards was valuable when the next order was received.

We used to think that a heater and range man and a roofer repaired heaters and ranges and roofs, and that was all there was to it. Everybody was expected to know just what that meant, and when such repairs were needed, they would send for *their* roofer.

But things certainly have changed. Roofing has expanded and everybody knows it. So also heating. The public has learned a lot about such things from being on the mailing lists of those who sell more than roofing and heating, and believe in telling the world all about themselves.

But today those shops which have mailing lists tell us there are various ways these lists must be built, and their use must be more frequent, or else they become useless and expensive.

Repeat orders come from satisfied customers, yet, in this modern day the methods for seeking business, told so interestingly and so persuasively, make it necessary to keep in touch with our customers much more frequently than before. We must tell them about the new

4415 Spruce St.		HEATING		Mrs. L.H.R-----	
Novelty A 40 draw center grate			Repairs at United Stove 117 Arch St.		
Apr. 12	1912	repd	39.00		
May 1	1913	cleaned	7.00		
May 12	1914	" etc.	14.00		
May 16	1915	cleaned	7.00		
June 1	1916	cold air returns	61.00		
May 2	1917	cleaned	7.00		
May 12	1918	"	7.00		
May 17	1919	"	7.00		
May 14	1920	" cement	12.00		
May 18	1921	new heater etc.	181.00		
	Etc.				

**Fig. 1.** One of the best ways to keep mailing lists is on cards like this. Names on these cards are folks you have done business with. They are your best prospects. This card dates back to 1912

and up to date, the latest doo-dad, the new invention.

Such new business is nearly all obtained through mailing lists.

Any mailing lists to give good service must be made up from—

1. A list of the customers on your books.

2. A list of those to whom estimates have been sent and lost.

quite frequently, as you can prove if you notice such announcements you receive in the mail. Some come from firms from which you never purchased any merchandise. But you are on their mailing list as a possible customer sometime.

These lists are usually kept in good shape by being checked against the letters that are returned.

customers, owners and even tenants, have you that live in your neighborhood that could use your services? Usually, not many.

Perhaps you say your shop and window is supposed to tell them what you sell, but that is not a personal invitation. Human nature is a funny thing and some folks can even think you do not want their business for various reasons. Maybe your window and shop always look the same, and becomes a habit and go unnoticed by those who pass. Did you ever invite them to become acquainted and come in and see what you have to sell?

One shop owner I know in our line read about this somewhere, and decided to check up on it. After he had obtained a list from the assessor of property and a list of voters in his precinct, he sent out a letter. To his surprise so many neighborhood customers were added to his customer list, that he is still urging the rest of the neighbors to call on him.

Don't you think there might be a gold mine at your door step? It does not cost much to find out.

During 1930, one shop owner was urged to go after thermostat business in his neighborhood. His customer list was used as a basis and the neighborhood list added. An attractive, catchy letter was sent out, including a circular and reply paid card, and within two weeks six thermostats and one humidifier had been sold at prices ranging from \$56.00 to \$125.00. He even sold some other business in his line. While this is being written he is installing a furnace fan at \$165.00. The cost of the mailing was less than \$50.00 and the profit \$210.00 net.

Another shop in the business district obtained the names of several stores and solicited their business. After sending letters and reply cards the owners received two orders that paid twice the expense. This owner is now gradually combing his neighborhood and receiving business.

(Continued on page 36)

2110 Walnut St.	Roofing	Miss H. -----
Main roof 28 x 46 -	1288	
Stairway " 26 x 18 -	468	
Rear 2 story 20 x 46-	920	2676 sq. ft. all tin
Repaired and painted	(all)	May 21-1913
" "	"	Nov. 16-1915
" "	"	Sept. 20-1917
" "	Main	May 16-1918
" "	Rear	Sept. 23-1918
" "	All	Dec. 5-1921
		\$79.00
		\$72.00
		\$91.00
		\$38.00
		\$49.00
		\$97.00
		3" x 4" corr.
		front double pitch
	Etc.	rear porch glass roof.

This is a similar card for a roofing customer. A complete story of this owner's roof is right at hand for reference, mailing, solicitation or to compare for bids

3. A list of your neighbors.

4. A list of names picked up at random.

These lists should be typewritten on plain sheets of paper and placed in a loose leaf binder, under four headings:

1. Roofing.
2. Sheet Metal
3. Heating.
4. General.

Then they should be placed in separate parts of the binder.

Why?

Those who have had experience and know all about advertising agree that the best way to advertise is to mention ONE subject at one time, so when a letter or circular is sent out, it should be about roofing alone to get roofing results. Heating and sheet metal the same. The general list, however, contains the list of all three headings and is used for announcements; change of address, telephone, removal, etc. Most mailers use such a general list

Some are also checked against the telephone and town or city directory once a year.

Other lists are kept in card index system, one box for each kind of list, and the card contains beside the name and address, a lot of information about the customer and prospect. Such information is mighty handy when you are looking for information in a hurry; in fact one list that is in good shape contains the rating of credit; kind of roof; size; height, etc., or the name of the heater and fan and size, where repairs may be purchased and oftentimes the price of each sale. These lists are valuable for the information on the cards, as well as for recording the number of the advertising sent out and when.

Of course a list of the customers is easily obtained from your ledger.

But how about the neighborhood? How well does the neighborhood know you? How many



Squares and squares of roof top the main building of the Detroit Municipal Airport. The roof is extra heavy, insulated and designed to care for a wide variation in expansion and contraction

## 2,000 Squares of Insulation and Roofing on Detroit Airport

THE municipal airport in Detroit is one of the largest and best equipped air fields in the country. Its facilities are very complete and it enjoys considerable transient and home patronage. One of the features of this field is the gigantic building which houses all the activities of the field. Under the roof of this building are the directing offices of the field and the clubs, acres of storage space for planes, workshops and garages for the mechanical equipment of the field.

All these activities are carried on under one roof, probably one of the largest single unit industrial roofs of the country. The building is a long rectangular structure divided into sections by fire walls. The roof is unbroken between these walls and is designed as a very flat, two-ridge roof divided between the fire walls by special expansion sections.

The contractor who laid this roof is John D. Busch and Sons Company of Detroit. The contract called

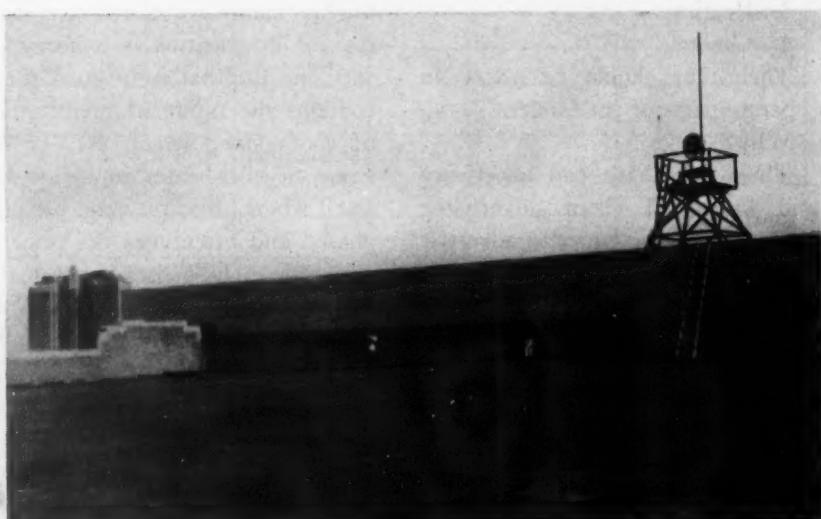
for more than 2,000 squares of roofing.

The roof is interesting because it is a heavy weight industrial, thoroughly insulated, and has some unusual features.

The structure of the building is load bearing masonry walls with

large steel trusses spanning the clear floor space between walls. Steel purlins were laid across the trusses and on these purlins light weight roof slabs were laid.

A cross section of one of these slabs shows a thickened edge with reinforcing in each edge. These

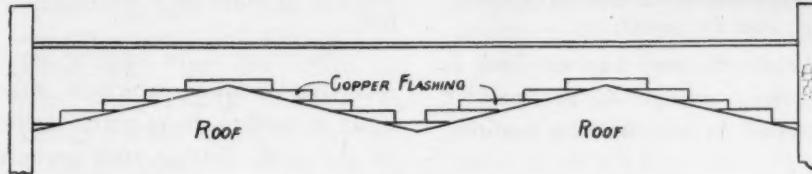


There are signal lights on the roof and maintenance of the lights brings considerable foot traffic over the roof. No gravel coating is used, however

slabs were laid over the entire roof and fastened to the purlins. The slabs are 2 feet wide and were supplied in various lengths averaging 9 feet. The aggregate of these slabs is light weight so that the handling of the units was an easy matter.

In order to reduce the heat loss of the huge building roof insulation was used over all the building sections.

In construction the roof of this building is designed to give many years of expense-free service. One heavy mopping was put on the pre-cast slabs and the insulation blocks were laid in this mopping while still



hot. There are two layers of insulation, each consisting of  $\frac{1}{2}$ -inch material, making a total of 1 inch of insulation.

The surface of the insulation was given a heavy mopping and while still hot a four-ply Michigan Standard roof was laid. In this type of roof the sheets are laid so that each course is exposed 8 inches. A mopping is made between each course so that the felt does not touch felt at any point.

The top courses of felt were then given an asphalt finish without

gravel. This top coating is exceedingly heavy and due to the flat pitch of the roof a very uniform surface was obtained.

Every precaution in the way of flashing and water prevention was

into the wall and the joint pointed with cement. These side wall flashing sheets were also cut into lengths of about 8 feet.

The roof is so large that adequate provision for expansion had to be



The end walls of the building and the dividing walls of the sections are flashed like this. Copper is used. Both design and construction are aimed to make the roof free from maintenance for the life of the bond

inaugurated throughout the job. One of the sketches shows a detail of the end and dividing walls. The flashing for these walls was applied in lengths of approximately 8 feet. Each course of flashing was laid horizontal to the ground and lapped so that the finished flashing appears like a series of long, low steps down the wall.

No cant strips were used on the roof, but the felt was carried well up the side of the wall and the flashing sheet carried down well over the felt. The flashing was plugged

designed into the roof. To give plenty of space for expansion each section of the building has a full width expansion joint running across the narrow dimension of the building. This expansion joint has a very practical design and is shown on one of the details. The concrete slabs were pitched up at the joint and a space of about 2 inches was left between the ends of the slabs. Over this space a formed copper sheet was placed. This sheet had a cross section as shown on one of the drawings. This copper strip was fastened to the insulation and the roofing material was carried right up over the metal to the beginning of the circular section. As the roof expands under moisture or heat the slabs can move together and the metal circle will close up. The action is just the reverse as the roof contracts. The joints of this copper expansion sheet are all lapped and soldered.

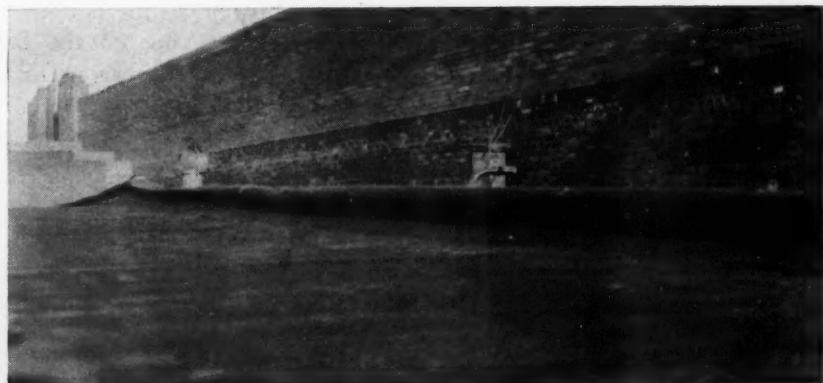
One of the interesting features of the building is the provision made for expansion in the side walls. Each side of each section of the building is composed of one long steel girder truss which carries along the bottom chord a series of telescoping doors. In order that a series of doors in any part of the



The field control tower is also on the roof and on busy days a stream of persons pass in and out, all over the roof

section might be opened up, it was necessary that this great girder extend the full length of the wall section. Because of this great length there is bound to be appreciable expansion in the girder and the walls which it carries.

To keep water out of this expansion slot of the wall a design as shown on one of the sketches was used. The walls carried on the girder are ended behind a secondary wall of brick which is really a false buttress, since the pier carries only the weight of the brick of the buttress. The true walls end behind this false front, but there is a space between the outside surface of the true wall and back side of the false pier. This is protected from water penetration by means of an S-shaped copper section which runs



This is a closeup of the copper covered expansion joint. This particular one has been broken by foot traffic

ley. All of these connect with inside stand-pipes which in turn connect with the sewer.

While the roof has not been in use long enough to get positive proof of its long wearing qualities,

walls there is bound to be much walking back and forth across the roof.

At the front of the building there is a control tower, which in busy times is used to direct aerial traffic on the field. During such periods there will be continual traffic across the roof. The designers of the building had this in mind when they designed the roof and built to provide for emergency.

After several months of service the only effect of weather and traffic is the flattening out and breaking of joints on one of the ridged copper expansion joints where foot traffic



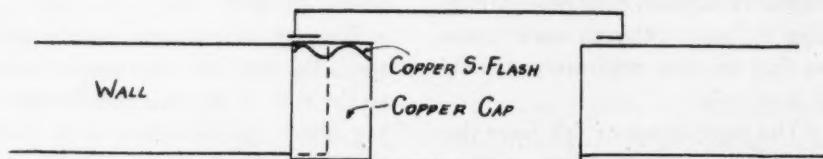
Cross section of the expansion joint. Purlins support the precast concrete slabs

from the top of the true wall to the concrete floor of the building.

The top of this water protection is capped across the coping of the wall by a wide sheet of copper which extends down the inside wall of the parapet ending in a deep lap over the wall flashing. In most of the joints this cap was formed of two sheet pointed by a flat locked seam. The edges of the copper were nailed into the joints of the inside surface of the parapet to insure rigidity in all weather.

Adequate provision had to be made for drainage on so large a roof. Throughout the building drains are located in the four corners of each section of the building and at the ends of the central val-

other roofs of similar design and built to Michigan Standards are noted for long life. In the case of this roof, sections of the surface



This shows how the expansion joint in the truss walls are protected from moisture penetration. The wide center section is a false pier and carries no weight. The copper cap extends down the inside of the wall and laps over the roof flashing

carry considerable foot traffic. On the top of the building there is one large revolving light platform which must be visited daily for inspection and maintenance. Since this tower is located on one of the mid-section

crosses the joint. The ridge seems to have stirred pedestrians to try and walk down it as one does on a railroad rail. Other than this the entire roof is giving evidence of lasting as long as the building.

We have been publishing articles on ventilation pretty regularly. Most of these articles have treated some specific problem of ventilation. If any readers have such problems or would like to have certain features of ventilation explained, send in the problem or request and we will furnish sound advice

# A Vase—The Plan of Which Is An Octagon

For Henry J. Provost, New Bedford, Mass.

THE problem of the octagonal vase was presented for solution by an ARTISAN reader of New Bedford, Massachusetts. The pattern of this vase is developed by the parallel line method, as used for such jobs as finials, urns and vases.

Begin by first drawing the vertical center lines m-n and the horizontal center line o-a. With the point of intersection of these two lines as a center and a radius equal to half the distance across the top of the vase draw a circle, and with the 45-degree triangle draw the octagon representing the top of the

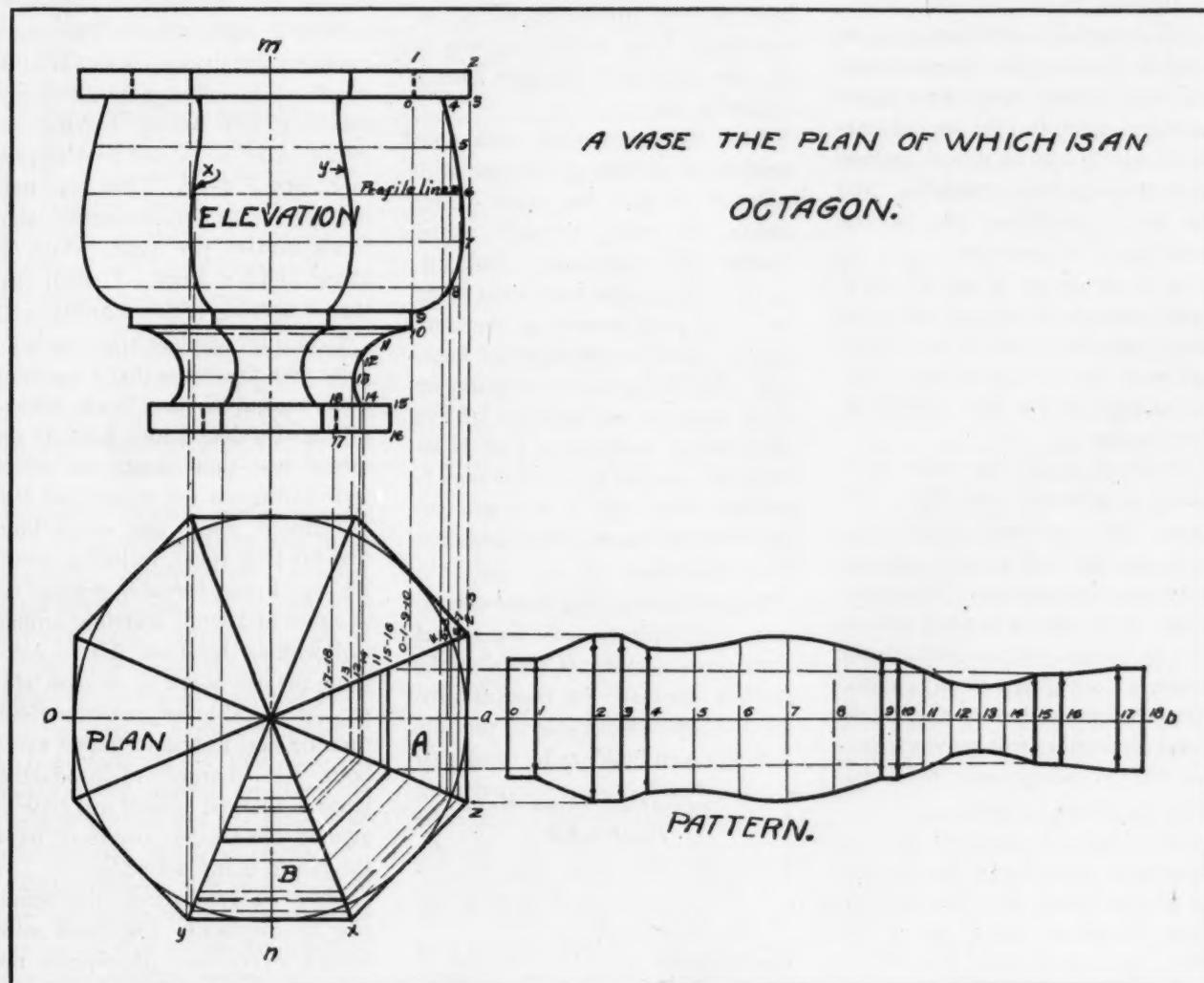
**By W. R. HAINES**  
*Contributing Editor*

vase. It is important that this be done carefully, and all of the sides must be of an equal length. Draw the miter lines from the corners through the center to the opposite corners as shown by the lines from x and y to the opposite corners.

Now draw the profile of the elevation the desired shape and number it as shown, from 0 to 18, and draw fine horizontal lines of indefinite length through each of the points on the profile. Now with the

dividers set from center line to 1, 2, 3, etc., step off these distances to the left of the center line and draw the profile of the left-hand side. In practice it is necessary to have only the one profile and the one angle A of the plan, from which to obtain a pattern, but as it is often desirable to have the complete elevation, we are including this explanation also. Now drop lines from each number on the profile, allowing them to intersect both of the miter lines of A.

Proceed with the pattern as follows  
(Continued on page 36)



# OVERHEAD

## How It Is Handled, Determines Success Or Failure in Business

I HAVE stated in former articles that (1) overhead should be figured and figured carefully; (2) that in my opinion overhead should be based primarily on productive labor; and (3) overhead should be figured and not guessed at. I put this last statement out as an absolute fact, not as an opinion nor as a theory. The handling of the overhead problem spells the difference between success and failure for the sheet metal contractor, and while plans for its application may vary, guess work must be eliminated.

Sheet metal contractors may be roughly divided into three classes. The first class, those who figure overhead carefully; the second class those who guess at it and include their guess in their estimating; and the third class those who pay no attention to it whatever.

In every large group of sheet metal contractors success and prosperity will range good, indifferent and poor according to whether they are classed in the first, second or third group.

In other words, the most prosperous contractors are those who figure their overhead most carefully, and the least prosperous class are those who ignore it. This statement, of course, is general and refers to classes and not individuals. There are exceptions to any general rule. A survey, however, of sheet metal contractors will convince anyone that prosperity and careful estimating go hand in hand.

The elimination of guess work in figuring overhead can be summed up in one word, namely, distribution. Every so often, say at the end of each year, every item of the

**By PAUL R. JORDAN**

business should be distributed. Every item should be accounted for and should be tabulated and placed in its proper place. This applies to expenses, to hours of labor and to materials. Perhaps the least important of these is the materials, for the reason that they are the least elusive.

Some systems of bookkeeping automatically take care of distribution. These are very good and if they were universally used I would have nothing further to say. The contractor I am talking to now is the one who does not have such a system in use.

That there are many such contractors is evident to anyone who seeks to advance the cause of accurate estimating through actual contact with contractors. One example of this is the tabulation made by a very good speaker on overhead whom I had the privilege of hearing. This tabulation was made up from expenses and opinions of five sheet metal contractors and I assume the speaker in question merely accepted them and is in nowise responsible for them. The tabulation is as follows:

Typical case set up from experience and opinions of five sheet metal contractors. (Owner works at least one-half the time at productive labor chargeable to the job, does not own building he occupies.)

### *A Successful Sheet Metal Contractor*

S aves all unnecessary expense, but gets all expense in as overhead on his estimates.

U nderstands that it is essential to

know what each job *costs* him.  
**C** credit with sources of supply—

Keeps it good.

**C** onfidence, strives hard to establish confidence of customer and supplier.

**E** ndeavors to be fair to himself.

**S** tops guessing and keeps good records.

**S** pends some time building up the industry as a whole.

This tabulation is interesting and brings out many points of value. But a perusal will show its inaccuracy to any contractor who really figures his overhead. Take item number 2, for instance. The owner manages the plant, sells \$25,000 worth of furnaces, does all of the soliciting and selling, handles his stenographic work and bookkeeping in 22 hrs. a week. Then take item number 11, his non-productive labor totals \$60.00 per year, which is about \$1.15 a week. I claim that that is keeping it down pretty well.

It is quite evident that the difficulty with this list is that it has been made up out of their heads instead of out of a distributing list. If the owner had time sheets on which were accounted for, every hour that he himself spent and every hour that his help spent, including cleaning up, firing furnace, getting rid of ashes and scrap, standing around and waiting for materials to come in or for new work to develop, etc., etc., he would know just how much time he had lost; and unless every hour not charged to productive labor is charged against lost time or against some other overhead item, the figure is not accurate.

Here we get back to the definition of overhead. Overhead must include every item of expense not

A—Volume of business for year.....	\$25,000
B—Owner's capital .....	3,500
C—Borrowed capital .....	2,500
D—Gross profit (15% on sales).....	3,750
1. Misc. office expense (sundries)	
Collections, expense (2 days a week and misc.).....	200
License fee and bond .....	30
Telephone and telegraph .....	120
Light, heat, power and water.....	100
Stationery, printing and postage.....	38
Trade papers and business magazines.....	5
Traveling expenses (conventions, soliciting, buying).....	25
2. Office salaries (owner) includes managing, soliciting, estimating, selling, etc. (52 wks. @ \$22).....	1,144
Stenographer .....	
Bookkeeper .....	
Estimator .....	
3. Auto expense (owner's car used in business).....	150
Truck expense (does not include driver's salary).....	200
Depreciation of truck .....	150
Insurance (fire, theft, liability, etc.).....	50
4. Advertising and donations (1½% of sales).....	325
5. Dues (Association, Chamber of Commerce, other commercial and civic activities) .....	
6. Interest on owner's capital (4%).....	140
Interest on borrowed capital (7%) .....	175
7. Legal expense .....	15
8. Taxes (city, state and county) .....	36
9. Misc. store expense .....	12
10. Allowance and back accounts (½ of 1%).....	125
11. Non-productive labor not chargeable to jobs).....	60
12. Insurance—Fire .....	20
Public liability insurance .....	40
13. Rent, shop, store and office (\$37.50 per mo.).....	450
14. Depreciation (stock, equipment and buildings) .....	
15. Damaged or wasted material .....	
16. Tools, repairs and depreciation .....	100
17. Workmen's compensation .....	25
18. Misc. shop expense .....	
19. Total of overhead or operating cost.....	3,760
20. Net cash profit for year.....	(Loss \$10.00)
21. Percentage of overhead (based on sales price).....	15%
22. Percentage of overhead (based on cost price).....	17.65%

chargeable against some specific job. In general we have only three classes of expenses in the sheet metal shop, namely, labor, material and overhead. Everything that is not labor nor material must be overhead, and on top of that, lost labor and lost material must be charged to overhead, unless they are included in the estimate of some job which is put through the shop. The jobs that you lose don't count.

Thus we see that the "typical case" set up above is truly a typical case in that it is set up from experience and opinions instead of from

facts.

The net result is a figure of 17½ per cent for overhead based on labor and material, which is not more than about one-half of what it should be; also the net cash profit for the year, a loss of ten dollars, is truly typical under the circumstances. I am not criticising the five contractors who furnished the information, nor the accountant who compiled it. On the other hand, I commend them for painstaking and sincere effort, which brings out the very point I am attempting to make, namely, that actual distribution

must be used,—experience or opinions will not do.

To the contractor who keeps books only to know what he owes and what he has coming to him, I would suggest that he distribute through a bank check book. In other words, if he pays by check and enters all of his receipts and all of his expenditures, he will find that paying by check is very convenient and furnishes him a record which is often quite valuable to him. I would suggest furthermore that he account for every hour both of his own and of his help, with time sheets. Then if he will check these back weekly against his payroll he will be in a position to stop leaks.

If at the end of each year he will go through his check book and set down every item of expense, he will have a complete account of his overhead. This has no value unless it is done absolutely. If he insistently classifies every item of expense somewhere under one of the three heads, material, productive labor or overhead, then he is bound to have everything accounted for. Otherwise, he is almost certain to miss a great many items, hard to classify, but nevertheless paid for out of his own money.

A business is like a roof; it is necessary to stop up the leaks. The hardest part of this process is in finding the leaks. After the leaks are found it is necessary that proper steps be taken to repair them. Distribution of all expenditures will go far in enabling the contractor to find the leaks. He cannot cut down his overhead nor his losses until he knows what they are and how much they total; and if he has an excellent and comprehensive system of bookkeeping which shows him what and where his leaks are, then does nothing about it, he still is not well off.

The most important element in figuring overhead is distribution. Proper distribution will enable the contractor to figure overhead without guessing at it; and overhead must be figured and not guessed at.

## Illustrated Letters Bring Business

**T**HREE are many kinds of letters which bring returns from prospects. And all letters do not have to contain a lot of reading matter. As a matter of fact, some of the most profitable letters are those which contain very little reading matter, but illustrate the thing they attempt to sell.

Benjamin F. John in Philadelphia uses just such an illustrated letter. At first glance this letter fails to show how it pulls replies, for it takes a second reading to show that there is an idea behind it.

That idea lies in the use made of this special letter. This letter is sent only to one class of prospect, the engineer, superintendent, or manager of factory and commercial buildings. These men use a surprisingly large amount of metal specialties. In fact, they are always making up something in metal for use in their building.

It is the aim of this letter to interest these men in the services Mr. John's shop offers. The letter shows the equipment in the shop and sells the idea that this shop is equipped to turn out these special jobs.

It is interesting to note that most of these jobs are such that there is an excellent profit in them. Such jobs take time and usually are not



large, but these very facts make the buyer willing to pay well for the special service.

Equally as important, they keep

this shop's name before the customer and when roofing or cornice or metal repair work comes up this shop is the first one thought of.

## Bright Metals Open Profitable Fields

**B**RIGH metals are finding wide use today in almost every phase of the sheet metal field.

Bright metal has followed ornamental trim by being used in signs and fixtures. Many contractors have worked up profitable side lines using this special metal. Signs have been found especially profitable.

The illustration shows an interior sign used in the Merchandise Mart, world's largest building, in Chicago. This sign shows the location of one of the building's restaurants.



This sign is constructed of Monel metal. The lights are neon, using white gas. The bright metal matches the trim of the lobby and accentuates the modernistic treatment of the building.

There is nothing difficult about the sign. It is built of angles welded together and covered all around with Monel metal. The edges are rounded and this round edge conceals the seam. Due to the operation of the neon sign only the wiring is contained inside the sign.

# Building a Profitable Cleaning Business

THE Pennsylvania Sheet Metal and Heating Company of Detroit, Michigan, is building a profitable business from their cleaning department. The plan under which this department operates is the result of considerable time and experience and as now conducted returns a good profit.

The basis of the plan is door to door solicitation. Solicitors are selected from applicants answering the company's advertisements for canvassers. From the applicants the best men are chosen for the company has found that careless solicitation or poor representatives can do more harm than good, even though they do not actually draw any pay from the company.

The reason for this is that the poor solicitor or the indifferent salesman overlooks many prospects and also creates antagonism which prevents future solicitation.

The solicitors are paid on a straight commission basis. There is no salary and no drawing account. A producer will bring in profitable

business, while the lazy or poor salesman will quickly eliminate himself.

Furnaces are cleaned on a flat rate basis—\$5.00 for one furnace

sticker shown below is pasted on the furnace in a conspicuous spot. Quite a repeat business has been built up through this simple expedient.

## Notice

**THIS FURNACE IS CLEANED AND REPAIRED BY THE**

**DENNSYLVANIA  
SHEET METAL & HEATING CO.**

**FOR GOOD SERVICE CALL UNIVERSITY 20730**

**6369 FENKELL AVE**

and \$4.50 for two furnaces, providing both furnaces are in one basement. This is for the two-apartment, or duplex houses.

After every cleaning job the

In addition to the personal calls, the company sends out direct mail literature, mostly in the form of cards like the double one shown. This card says that the bearer is entitled to a discount if the order is placed before a certain date. This stimulates interest, but also keeps the flat rate of \$5.00 standard.

The company uses portable Super Suction cleaners and also some of the cleaner company's literature. They also have prepared and mailed some of their own literature.

Under the plan now in operation the cleaning of the furnace is only the preliminary step in a sale. Every cleaning prospect is solicited for repair and replacement work. Every cleaning job is visited by a salesman who inspects the furnace and advises repairs or replacements.

In this way a very profitable repair business has been worked up. The company has found that most furnaces require a new smoke pipe, new grates or grate parts, perhaps re-cementing or some new castings. Each item is brought to the owner's attention and necessary work recommended.

No 1686

### This Coupon is Valuable!

Name.....

Address..... Phone.....

Authorized by.....

YOUR FURNACE CLEANED BY Only

VACUUM \$7.50 WITH COMPLETE INSPECTION

Pennsylvania Sheet Metal and Heating Company Longfellow 0730 6369 Fenkell Ave. Detroit, Mich.

I wish to make this saving. Have your service men Vacuum Clean our furnace on the following date.....

Signed.....

No 1686

\$2.50

This Coupon will be accepted as \$2.50 CASH if order for Vacuum Cleaning is received BEFORE JULY 1st

\$1.50

This Coupon will be accepted as \$1.50 CASH if order for Vacuum Cleaning is received BEFORE AUGUST 1st

\$ .75

This Coupon will be accepted as \$.75 CASH if order for Vacuum Cleaning is received BEFORE Sept. 1st

# How to Improve the Sheet Metal Business

**H**OW to improve the sheet metal business. That is the question.

Nothing I can offer will instantly solve our problem, but suggestions are in order. What appeals to one may seem ridiculous to another, but I sincerely hope that each of us may carry away from this meeting some idea which he may profitably develop.

#### Trade Papers

First, I wish to mention the trade papers. Are you reading the excellent articles being brought to your shop by the various trade papers? You like to do business with the man who knows his line; who is an authority on his subject. Recently articles containing very valuable information have been published. You are urged to post yourselves.

#### Ventilating and Air Conditioning

This is being developed considerably. The public is beginning to expect and demand good air. They get it in the theaters and newer public buildings. Air reconditioning will spread to the stores, offices and into the homes. Are we prepared to meet the requirements when we are confronted? It may pay some of us to specialize in this work, remembering that this is the day of efficiency.

In considering ventilation the gravity ventilator is not to be overlooked. However, let us recognize the modern fan ventilator. Factories in particular frequently have very bad conditions which require positive continuous ventilation. They are willing to pay the extra cost. The fan ventilator is positive and continuous in its action, not depend-

**By GEO. C. JOSLYN\***  
*Sales Mgr. Tanner & Co., Indianapolis*

ing so much on outside conditions.

#### New Metals

New metals are being produced. Specifications are coming through for aluminum ventilators. If this metal has already become so recognized, we should post ourselves concerning its properties.

Stainless steels are glimmering on the towers of New York buildings. The smaller cities are quick to imitate, and at any time you may expect such a tower to appear in our own territory. Are we ready to cope with the problem which may be presented?

New metals are being extensively advertised and will find their way into thousands of uses. Are we ready to recommend them? Do we know how to work them successfully?

#### Grilles

Thousands of dollars' worth of grilles are used annually in Indiana and sometimes they are specified in the ornamental iron contract. The other trades fight for their rights, trying to get as much as possible in their own contracts. Grilles are a part of the ventilating system. Let us insist on keeping them in the ventilating contract. Your jobbers will gladly quote you, regardless of whether the grilles are to be ornamental cast iron, cast bronze, sheet brass, or steel.

#### Awning Covers

I rather hesitate to present this suggestion, but I am prompted to proceed because of the Marrott Apartment Hotel in Indianapolis. It displays 900 metal awning covers. A very nice order. The new apartment buildings especially are being equipped with attractive, ex-

pensive awnings. It is only good policy to have them protected from the dirt and weather by a metal cover.

#### Skylights

In the olden days we would have squinted in the dim light, finding satisfaction in the knowledge that we were saving on the light bill. Ah! but not so now. We have had a taste of the best and we are no longer satisfied with less. No artificial light is as good as daylight. If you had to work daily under artificial light you would appreciate this fact. Let's don't wait for someone to ask us about skylights. They belong in our business. Let's give them the attention they merit. We cannot go out individually tomorrow and accomplish a great deal on this subject. However, if our trade will continually talk skylights, a great deal may be accomplished. We must never fail to stress the point of better light, natural light, and a reduction in the cost of artificial light.

#### Selling Maintenance

I recently talked with a sheet metal contractor who installed an 8-pound tin roof on his own home 36 years ago. It has never developed a leak and is yet in perfect condition. Why? Because it had been properly painted at regular intervals. As an outside job is finished, why not suggest to your customer that its maintenance be left entirely to you. Explain that you have installed a good job, using good materials, and, as installed, it should last so many years, but if regularly painted it will last indefinitely. Those paint jobs would be done at your convenience, sandwiched in between better paying jobs; but don't overlook the fact that it would keep you in constant touch with your customer. What

\*Address before District Meeting, Sheet Metal and Warm Air Heating Contractor, Vincennes, Indiana.

chance for a competitor to get in a wedge? In case of any needed repair, it would automatically come to your attention.

#### Lumber Yards Encroaching

Lumber yards are encroaching on our business. Hundreds of squares of galvanized roofing have been sold this year in Indiana by lumber yards. They also sell steel windows, metal lath and metal lumber. Why? In self-protection. They have been quick to recognize the increasing use of metals. Are we getting our share of the increased metal business?

An attractive shop creates a favorable impression. Are we taking advantage of this? You always have the advantage if you can get

your customers into your own store where the goods are properly displayed. You can explain your points not by a pencil sketch but by showing the goods. In this connection, let's don't overlook keeping the windows clean.

#### Sell and Install Quality

The public in general knows very little about our items. The average housewife operates the furnace according to instructions. The home owner comes confidently to us for recommendations and good work, in the same manner as we approach our dentist, doctor or tailor. Imagine yourself having three dentists bidding on your work. You accept the lowest bid. The work is completed and the bill paid. Six months

later you awaken in the night with a howl of pain, cuss the dentist, and condemn the entire dental profession. Yet you got just what you paid for and should have been satisfied. The home owner, however, who has proceeded similarly finds that his furnace is a *continuing* pain. It hurts *all winter long*. Is the dentist comparison farfetched? Then let's consider something closer home—for example, the coal dealer. You get prices on coal, buy on price, and in July and August you look forward to a pleasant winter. Cold weather comes along, as it will. You start shoveling what develops to be "cuss producing" fuel. Next winter do you trust the same coal dealer again? No!

## Soldering An Organ Blower Pipe

HERE is a practical hint for the sheet metal contractor who does repair work his competitor can't do. This particular hint applies to the repairing of organ pipes. With the number of organs now in use around the country there should be quite a bit of such work.

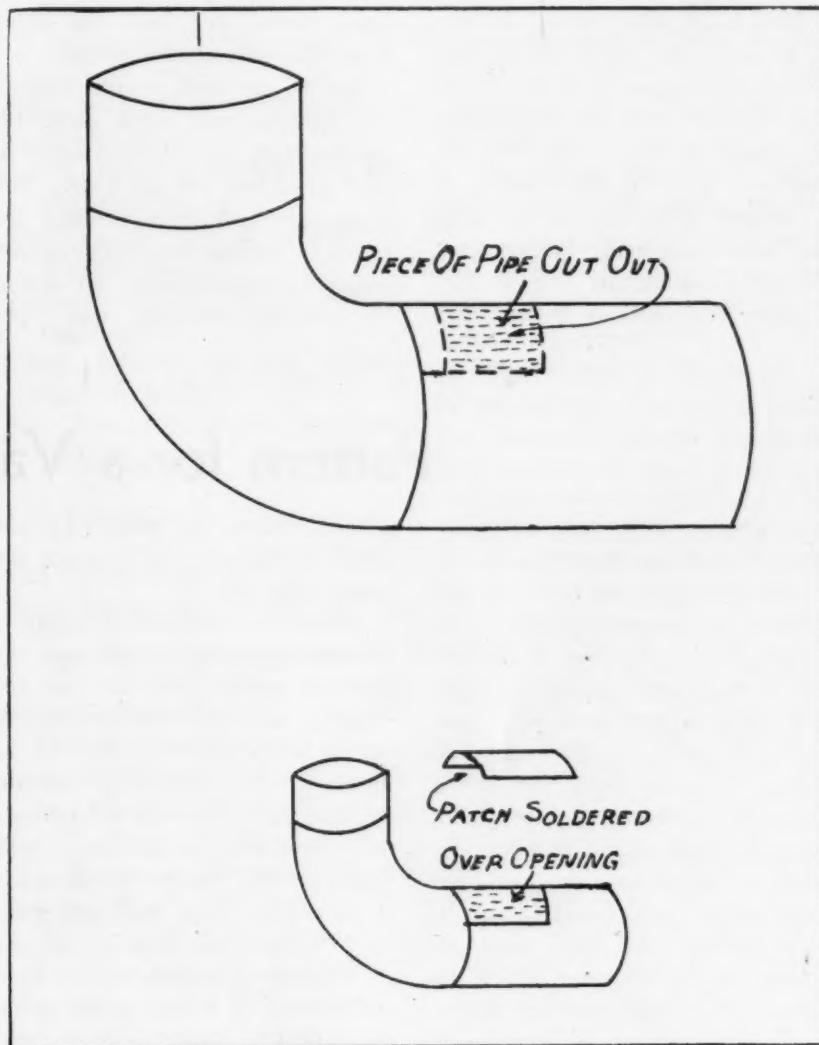
Of course the method can also be used on any similar pipe where conditions are equally difficult.

This excellent "kink" was worked out by Arthur C. Miller of Elmira, New York. Mr. Miller says—

"I am enclosing a sketch and description for soldering the blower pipe on a console organ.

"As anyone knows who has worked on this type of job, the least little hole will whistle when the organ is in use.

"In corners where soldering underneath is almost impossible, cut a piece out of the pipe at the joint, as per sketch, and solder the joint inside, on the bottom and on the sides. Then place patch over the hole and solder same and the upper part of the joint. This is much easier and better than using a hand mirror and an iron tinned on one side."



## Let's Make Some Money

(Continued from page 25)

It's funny but we ought to remember that those for whom we estimate and lose will surely be in the market again sometime. Then why not add them to the mailing list?

When large concerns start with a full page newspaper advertisement, and buy lists of names and then repeat this action, it means that they have found mailing profitable. With their new and up to date methods they find business of a new character or else take it away from some shop. Does not this indicate that care should be used to hold the customers on your books, and be alert to introduce the new to them at the same time? We have a preferred position through previous service, why not hold it? The mailing list is the answer.

Men invest their money to stay in business, and after adding customers they expect to derive a further revenue from these customers for years to come. But this dependence under modern selling is no longer certain unless we keep our name continually before folks through a mailing list.

How often shall we use this list?

At least four times a year for each heading, and as many as possible more times when we have something new to sell or talk about.

Advertising is done in many different ways, but the cheapest and easiest, I believe, for the average shop is through a well thought up and worded letter, using the manufacturer's literature that is addressed to the consumer, a reply card, postage prepaid always. If I were asked again to advise where to get the information to study just what such a letter should include, I would refer anyone to the article printed in the annual number of the AMERICAN ARTISAN, December 20, 1930, for therein is contained a brief but very sound instruction on what to include in a sales letter, and in very plain language. All that is necessary is to take several blank sheets, and build the letter from the instructions given.

But to get back to the mailing list why not add a few architects and builders, too? It is possible to pick out a few and try it out. One shop owner who was strongly opposed to bidding for architects and builders finally tried this out, and to his surprise received some very

profitable business. After he met his customers, he used his sales effort to sell first class work OUT of the competitive field.

You never can tell until you try.

Every mailing list should pay for itself, and return a profit. It should do this with the least possible effort on the part of the user. It has always proven that it always does pay for itself in direct ratio to the amount of care and use given. The profit is up to us.

Again, I repeat, our trade can adopt modern methods just the same as any other business, and the up to date mailing list and its proper use are modern. If mailing lists received the attention they deserve as a money maker the seasonable business, so called, will soon become an all the year round business in the average shop.

During the last week three shops I am intimately familiar with balanced their books and showed a profit. This has been a rare occurrence with these shops for several years, and a good deal of the credit for this showing in a dull year is credited to the mailing list they possess.

## Pattern for a Vase

(Continued from page 29)

lows. Extend the center line o-a to b, and upon this line step off and number the distances found on the profile of the elevation as shown, and through each of these points draw vertical lines as shown. Now from the points on the miter line draw horizontal lines intersecting the vertical lines which were drawn through points of like number. To avoid confusion only the four lines from points 2 and 3 and 15 and 16 were drawn. All lines must, of course, be drawn, after which the curved and straight lines are drawn through the points of intersection.

This completes the pattern for one piece of the vase. All others are made from this.

Should it be desirable to complete the elevation view of the vase, the lines are carried from the miter line drawn from z to the center, parallel to the line z-x, also parallel to the line x-y. It is important that this be done carefully, with a sharp pencil. Now draw vertical lines from each of these points on the miter lines of B. These lines will intersect the horizontal lines of like number on the elevation drawn from points 1, 2, 3, 4, etc., on the profile line. It is, however, possible to take

the distances from the center line of angle B to the miter line and step off these distances each side of the center line on lines of like number on the elevation view. This was also possible in the development.

When the points are located the miter lines x and y are drawn through the points, thus completing the elevation view. If the vase has an odd number of sides, such as 7, the plan is drawn so as to have a profile view, making it possible to draw the stretch-out line and project lines from the various points on the miter line, as was done in the development of this pattern.

# Indiana S. M. & W. A. H. Contractors Hold Lively 1931 Convention

**W**ELL, the first convention of 1931 is over. Indiana held their annual convention last week in Ft. Wayne.

Right here, for the benefit of those who have been predicting poor attendance and pessimistic atmospheres, we want to say that this year's Indiana convention was a dandy. Lots of pep, plenty of enthusiasm, first class program, an excellent meeting place.

And for emphasis let us say that half of the attendance was CONTRACTORS!

The enthusiasm and feeling of optimism which prevailed throughout the sessions was catching. If other conventions show the same spirit, 1931 should prove much better than 1930 or even 1929.

Just a word about the meeting place. Last year some criticism was heard over the accommodations in Indianapolis. This year the Ft. Wayne local staged the meeting in the Catholic Community hall. The building is close to town; has a fine, large auditorium for displays, a large stage at the front for the meetings, a cafeteria and rooms for those who wanted to reside in the building, and plenty of recreation facilities such as indoor golf, a swimming pool, gymnasium, and reading and lounging rooms.

The Ft. Wayne men are to be congratulated for the splendid arrangements and the excellent program.

## Tuesday Meeting

Tuesday, the opening day, was given over to registration, arrangement of displays and meetings of the various committees. In the afternoon the first session was called together to hear the address of welcome by J. M. Triggs, president of the National Association of Sheet

Metal Contractors. Mr. Triggs remarked on the excellence of the attendance and the display floor. "Such a showing of confidence on the part of both the contractor and the manufacturers indicated," he stated, "that times were probably not as bad as some feared and that some turn for the better may be expected in the near future."

Mr. Triggs, in concluding, paid tribute to the work of the business papers serving the trades. He called attention to the articles and drawings and pictures and the discussions carried on to the benefit of readers.

In the morning the Fur-Mets

## OFFICERS FOR 1931

**Pres.—H. A. Beaman, Zionsville.**

**1st V. P.—O. Voorhees, Indianapolis.**

**2nd V. P.—D. R. Swisher, Richmond.**

**Treas.—Thos. Ewing, Huntington.**

**Corp. Sec.—Homer Selch, Indianapolis.**

**Ex. Sec.—Paul R. Jordan, Indianapolis.**

## DIRECTORS, 1931-34

**C. C. Sieb, Fort Wayne.**

**John Balkema, Lafayette.**

## DISTRICT GOVERNORS

**Charles Gatz, Gary.**

**I. Harris, South Bend.**

**Louis Lehman, Lafayette.**

**Chas. Rundell, Fort Wayne.**

**Guy Lefforge, Indianapolis.**

**Gus Hartman, Terre Haute.**

**Joseph Meyer, Vincennes.**

**J. W. Loesch, Columbus.**

**Clive Branham, Bloomington.**

**Dan Stevenson, Richmond.**

**Delbert Dawson, Muncie.**

held their election of officers. A list of the officers for 1931 is shown in an adjoining column.

## Wednesday Session

Bright and early Wednesday morning the meeting opened with a good attendance.

The first speaker was R. W. Mahoney, western representative of Sheet Metal Worker. Edwin A. Scott, editor of the paper, was unable to attend, but a prepared paper was read by Mr. Mahoney. The subject of the paper was, "The Owner's Salary, How Much." Mr. Scott said in part:

"Owners of sheet metal shops as a class are underpaid, and this condition is unjust to such owners themselves and to the industry as a whole.

"This leads one to ask: 'Why should this condition exist and what can be done about it?' The prevailing answer of owners to the first question is: 'The business cannot afford to pay more.'

"The answer is an excuse, not a reason, for if an owner cannot so manage his business that he can pay himself more than he is paying his best paid mechanic, he is not qualified to run that business.

"A further difference in the situation is that the owner, because of the disposition of his case being largely in his own hands, continues to hang on even if he is not getting full wages. It would improve the situation generally if some plan could be worked out so that an owner could be discharged just as a mechanic is, when he fails to earn standard pay.

"The inability of sheet metal shops to pay the owner a satisfactory salary arises primarily from too low prices being charged to cus-

tomers. Some economics may be worked out in methods of executing the work, but revenue from such source is but a fraction of that to be obtained from better prices.

"It must be admitted that in practically every locality a sheet metal shop must contend with low prices quoted by ignorant competition. By this is meant competition of shop owners who do not know their costs and do not properly figure in their overhead. Far too many shop owners are afraid of such competition, and in that statement is embodied the underlying cause of so many low prices being quoted."

#### **Sheet Metal's Share of 1931 Business**

Robert S. Schmieder, Specialties Division, Milcor Steel Company, addressed the convention on "Sheet Metals' Share of the 1931 Business." The principle point brought out was that contractors should not be content to bid simply on the specifications submitted by the architect or the general contractor or builder.

"The way to get more business," said Mr. Schmieder, "is to send with each bid an alternate bid outlining what additional work can profitably be done in sheet metal." This point was illustrated by a large scale drawing of a typical one story building on which a bid as specified was rendered and an alternate bid as proposed by the sheet metal contractor also enclosed.

A full report of this paper will be made in a later issue.

#### **Wednesday Afternoon**

The first speaker on the afternoon program was W. C. Markle, editor of *National Sheet Metal Contractor*, Pittsburgh. Mr. Markle's subject was "What Can We Do About It?"

Mr. Markle pointed out that one of the best ways to increase the sheet metal business was to acquaint architects with the possibilities of sheet metal. The best way to do this, he said, was to sell or distribute

#### **FURMET OFFICERS**

**Pres.—A. C. Selvig, Indianapolis.**  
**1st V. P.—Geo. C. Joslin, Indianapolis.**  
**2nd V. P.—W. R. Lawson, Chicago.**  
**3rd V. P.—O. A. Nichols, Indianapolis.**  
**4th V. P.—R. C. Gustafson, Dowagiac.**  
**Sec.—H. R. Jones, Indianapolis.**  
**Treas.—John C. Henley, Indianapolis.**

#### **DIRECTORS**

**L. A. Cooper (chairman), Indianapolis.**  
**F. H. Boone, Indianapolis.**  
**F. A. Wilkening, Indianapolis.**  
**W. P. Meador, Indianapolis.**  
**O. D. Anderson, South Bend.**

#### **MEMBERSHIP COMMITTEE**

**L. A. Stark, Chicago.**  
**Bob Renick, Indianapolis.**

copies of Standard Practice in Sheet Metal Work, the association's book.

Already some 3,000 copies of the book have been sold. Some 475 copies have been given to architects and about 30 copies sold to architects. Most of those given away have been distributed with the compliments of some local association or some local contractor.

This progress, however, said Mr. Markle, is not enough. We should prepare some plan whereby more books and faster distribution will be assured.

The national association now has a plan under which a special edition will be prepared in which advertising will be sold. Such books will be especially pushed to architects and contractors. If this plan goes through faster distribution is hoped for.

Edwin S. Woodward, of the Aluminum Company of America, then gave a talk on "Aluminum as a Roofing Material." Excerpts from this paper follow.

"It was in an old-fashioned

"Buckeye" wood-shed, on a cold day in February, 1886, that aluminum was born as a commercial metal. The wood-shed in which aluminum had its start, however, was more of a laboratory than a wood-shed. Charles M. Hall, a young man living in Oberlin, Ohio, and attending his home town college, had installed what apparatus he could buy and borrow and was trying to produce aluminum with electricity. He graduated from Oberlin in 1885, and eight months later succeeded in making his first small bits of aluminum.

"For sixty years scientists had tried to produce aluminum at low cost, but until Hall's discovery, these efforts had been fruitless. Eighty years ago aluminum was \$90.00 per pound, and even at the time of Hall's invention the metal was \$8.00 per pound. In 1890 the Hall process produced 60,000 pounds of aluminum and this was sold at \$1.55 per pound. Today, the world produces approximately 400,000,000 pounds yearly and sells it at an ingot price of 25 cents per pound.

"Rolled sheet has been the most useful among the fabricated forms of aluminum and has been used for a multitude of sheet metal purposes. During the past few years it has come into growing prominence as a material for roofing and accessory sheet metal work. The first aluminum roofing installations used unformed sheet and were of the flat lock, standing seam or batten seam type. Aluminum shingles then were developed, to be followed later by corrugated sheets for industrial roofing and siding. Incidental accessories such as nails, bolts and nuts, rivets and screws are made of strong aluminum alloys similar to those used for airplane propellers and structural parts.

"From a study of aluminum sheet after periods of long service exposed to average weather conditions, it is generally recommended that aluminum sheet, 20 gauge B. & S., should be utilized for ordinary sheet roofing purposes. Sheet less than

half that thickness has been microscopically examined after approximately 30 years of service and was found to be in excellent condition in a fairly severe industrial atmosphere. With all commercial metals, local conditions and methods of installation must be considered in connection with the natural durability of each metal under normal conditions.

"If aluminum installations are to be made in connection with another metal, direct contact between the two should be avoided, thus eliminating electrolytic action. The most commonly used insulating material is bitumastic paint. Although a layer of asphalt felt is sometimes employed, a single coat of bitumastic paint is generally chosen. This insulative paint is also applied where aluminum is to be embedded in wet mortar or wet concrete to prevent chemical action. In the presence of water, the alkalis of the mortar or concrete in contact with uninsulated aluminum would set up chemical action, causing the formation of gas bubbles that tend to destroy the mechanical properties of the mortar or cement. Dry cement or mortar has no effect on aluminum. Insulation should also be provided for when aluminum is in contact with gypsum block, to eliminate danger of chemical action on the metal.

"When nails, bolts or screws are required in the assembly of an aluminum installation, they should be of aluminum and are available in a wide range of sizes. Durability and good appearance are benefited by care in excluding or insulating other metals in an aluminum assembly. These methods are standardized by manufacturers of aluminum roofing and corrugated sheet, with which materials aluminum accessories are regularly recommended and furnished.

"Standard methods of roofing construction for flat lock, standing seam and batten seam, and for corrugated roofing, are used in applying aluminum. There are no major deviations from the procedure es-

tablished for sheets of other metals.

"The most commonly used aluminum sheet for roofing purposes is 3S alloy sheet, obtainable in any gauge and in various tempers, ranging from soft annealed to full hard. For the average roof 20 B. & S. gauge sheet is commonly used, in two tempers, dead soft and half hard. Full hard,  $\frac{3}{4}$  hard and  $\frac{1}{4}$  hard tempers are usually required only for special conditions, in which case the wide range of tempers available is a decided advantage.

"Aluminum is never soldered in roofing work. Although aluminum sheets can be joined together by solder and the joint will be relatively permanent when kept dry, the presence of moisture will tend to disintegrate the solder composition with considerable rapidity. Where other sheet metals are soldered, aluminum is welded. The same types of weld, that is, butt, tee, fillet, etc., are made in aluminum as in any other metal. Aluminum has certain characteristics which necessitate a somewhat different technique from that required with other metals, and some training will be necessary before a welder can turn out consistently excellent results with aluminum. This special technique is by no means difficult to acquire, for, in point of fact, aluminum is one of the most readily weldable of all metals."

The delivery of the paper was followed by a general question and answer discussion led by J. L. Herwood of the Aluminum company.

#### Thursday Morning

The opening address of the morning was given by L. C. Leimkuehler of the Copper and Brass Research Association on the subject, "Copper Data."

The highlights of this discussion are quoted:

"You are doubtless familiar with the activities of the Copper and Brass Research Association and know that it represents the copper mining and fabricating industries in promotional and research work. It works along with other industries

which are interested users of copper products, one of which industries is your own.

"Naturally, we of the copper industry and you, as sheet metal men, are interested in trends and developments which have a bearing on the future use of metal in construction. One of the significant things is the trend toward modernistic design for buildings.

"To date, this trend has been more pronounced abroad, particularly in Germany, than in the United States.

"Germany is leader in modernistic construction and has many buildings which display an extensive use of copper for vertical surfaces such as walls. In Germany, there are even all-metal houses built in sections at the factory, shipped 'knock-down' and requiring little labor in having them set up. The exterior of these houses, which are of the bungalow type, is copper, and, incidentally, copper is the predominating material for this use in Europe.

"Many new business buildings in the modern manner employing much copper and its alloys for exterior metal work have been or are being erected in German cities. Architects there have even designed department store buildings in which masonry would not figure, the walls being simply 'curtains' of metal and glass.

"'Gurmenis Haus' is a famous new modern building in Berlin which houses a group of fine restaurants. The exterior is largely copper, bronze and glass, which make this structure a brilliant center in the sunlight and white-light district all by itself when lighted by electric lamps at night. Large areas of the walls and ceilings of the dining rooms are of polished copper which mirror the scenes at the tables.

"Germany also has many notable churches which show large use of copper for side wall construction. 'Die Stahl Kirche' at Cologne is entirely enclosed by copper and glass. Its tall towers present one of

the most extensive uses yet made of copper on vertical surfaces.

"Sheet metal has played an important role in the building construction of the past. It certainly will be no less indispensable in the building construction of the future. It would appear, in fact, from the trends of the times, that a bigger and better era looms ahead for the sheet metal trades.

"Interiors of many kinds are being treated with polished or colored copper, or with sheet brass and bronze. I am advised by a firm of interior decorators in Chicago that they function more as specialists in interior application of sheet copper, brass and bronze, than in any other field."

The concluding speaker on the morning program was Platte Overton, consulting engineer, Chicago, who discussed "The Big Job."

Mr. Overton passed around through the audience large sheets showing the duct layout for a typical small factory or commercial building in which the heating problem was to design a duct system so that all parts of the building would be heated uniformly. These sheets were identical with the sheets which have accompanied his articles in recent issues of the AMERICAN ARTISAN.

The sheet discussed showed the duct system as laid out by the engineer. The sheet also contained suitable tables and graphs showing how sizes of round pipe can be converted into rectangular ducts.

One of the features of the Overton system of simplified engineering is the data sheet which contains an item for every loss which must be considered in arriving at the size of the heater or the amount of heat necessary to keep the stated temperature within the building.

All of these features of the typical job were taken point by point and discussed by Mr. Overton as the members followed him on their blue prints. It was explained that using such a system made it certain that no loss would be overlooked and that the job as laid out

would be satisfactory.

The discussion brought out a number of interesting questions such as the calculating of duct sizes for stated amounts of air and the sizing of the system for resistance, etc. Mr. Overton brought out the interesting point that it is perfectly possible to design any system so that when the fan is turned on each inlet, regardless of its location or size will deliver just its allotted quota of warm air without any dampers being used in the system.

wanted to sell and make a profit might do so by constantly keeping in mind the fact that there is a wide difference between the lowest priced article he can sell and the highest priced.

"Too many contractors," the speaker said, "seem to feel that the term merchandising is something to be afraid of. These contractors feel that merchandising is doing the kind of a selling job that the high pressure real estate and bond salesman or the oil burner salesman

	Minimum Cost	Maximum Cost
Cleaning .....	\$ 3.00	\$ 7.00
Alterations suggested by comparison with Standard Code installation.....	50.00	200.00
Installation of automatic controls.....	36.00	125.00
Installation of forced air (no labor).....	30.00	125.00
Humidifiers (no labor).....	6.00	36.00
10 new registers replacing old ones.....	20.00	30.00
3 new return air grilles for old ones.....	13.95	27.00
Installation of filters at furnace.....	12.00	40.00
10 ft. new smoke pipe.....	5.20	6.50
New grates (no labor).....	12.00	20.00
New furnace (no labor).....	45.00	100.00
	<hr/> \$233.15	<hr/> \$710.50

In the absence of one of the listed speakers, Mr. Stark of the Minneapolis-Honeywell Company gave a short talk on regulators and automatic control. Much of this discussion was in the form of questions and answers. A lively discussion was developed with several points brought on how controls should be hooked up and what can be expected from a controlled system.

#### Thursday Afternoon

The afternoon session was opened by George Harms who outlined some of the developments in marketing the revised edition of the Standard Practice book and entreated members to stand by and work for and with their local associations.

Mr. Harms was followed by J. D. Wilder, editor of AMERICAN ARTISAN. The subject of this talk was "What Is This Thing Merchandising?"

The gist of this talk was how any heating contractor who really

does when he wants to do just one thing—put his product in the home.

"The truth of the matter is that merchandising is really only sensible selling. If the contractor will remember that the owner wants to buy those things which make for comfort and convenience and that a good sales talk on this product will create the desire to buy, the worst half of the sale is over."

To illustrate this point a list of figures compiled from contractor's operations during the past few weeks were cited. These figures show that whereas the contractor might sell a heating job for just over \$230.00 if sensible selling were used this same job might be converted into a \$700.00 job.

The selling plan discussed began with a cleaning job. This might come in unsolicited or might require some selling expense and effort. In any event, the cleaning alone might cost \$3.00 for a low figure and \$7.50 for a high figure. But the contractor should not stop there, but try to sell one or all the

accessories and products handled. Starting with the cleaning the job can be built as shown in the table.

"From these figures," the speaker said, "it is possible to visualize how a simple cleaning sale can be built up to whatever amount the pocket-book of the owner will stand. Of course not every cleaning job can be made into a \$700.00 sale, but if the contractor will just remember that there is a \$700.00 sale behind the \$7.00 cleaning job he will be more apt to try to sell something more."

The concluding speaker of the

convention was G. A. Voorhees, who talked on "Fans in Warm Air Heating." The speaker outlined the problems of fan operation when a fan is hooked into a gravity system and explained how this sort of a transition does not always work as intended.

Mr. Voorhees outlined some of the problems which are encountered by the average heating contractor starting to do fan work. The major portion of his talk followed closely his articles which have appeared in AMERICAN ARTISAN during the last few months.

As a favor to the audience, Mr. Voorhees concluded his talk proper quickly and threw the address open to questions. He was at once deluged by questions from contractors who wanted to know the why's and wherefore's of certain results obtained. To outline these questions and their answers here would require far too much space, so we are going to incorporate these questions into articles to appear from time to time in the future.

The banquet and dance in the evening concluded the entertainment.

## Indiana Association Ladies Meet in Ft. Wayne

THE ladies were not forgotten on the Indiana program. The ladies of Ft. Wayne entered into the spirit of the convention with a right good will and provided entertainment of a varied and interesting nature.

Early the first morning a committee of the local ladies was present to meet all visiting women and get them acquainted. Mrs. Charles Tharp was the chairwoman of this committee. In the afternoon a get-together card party was held in one of the social rooms of the building.

In the evening the ladies were given a theatre party at the new Paramount theater.

Wednesday noon a most delightful luncheon was given in the building to about forty ladies. Miss Baker entertained during the luncheon with songs and music. After the luncheon a shopping tour through the department store of Wolf and Dessamer was taken under the personal direction of Miss Weaver who also served the ladies with hot chocolate and cakes.

An evening card party was tend-

ered all visitors while the men folks were at the L. O. S. T. initiation.

On Thursday morning a trip through the Perfection Biscuit Company plant was made with generous samples of all products and a souvenir package of choice cookies given the ladies.

Later in the day a motor trip around the city followed by a trip to the top of the Lincoln Tower, highest building in Ft. Wayne, was made. In the evening the ladies attended the annual banquet with the men of the association.

## We Can't Forget the L. O. S. T.

AND by all means we must not forget the session of the Loyal Order of Stinky Tinks. They had an initiation and a meeting. And what a meeting.

Of course we can't give away all the secrets of the organization, but some 200 men were either taken through or shown the ritual. It is reported that Harry Jones of Indianapolis conducted the session,

but some of those who took the initiation are reported to have said that Harry wasn't there. Somehow some of the boys must have been seeing double.

Of course that famous Chick Sale edifice was right on the job and again served to form an entrance for the boys.

During the meeting a male quartet delivered themselves of varied

songs and fun in which anyone feeling so inclined joined.

After the singing three shapely young ladies did a varied program of dances for the edification of the members. Some unkind soul maintains that they couldn't dance worth a darn—but what did we care whether or not they could dance?

The initiation is now a fixed part of every Indiana convention.

# CAN YOU TELL ME?

## Gas Furnaces—Gas Conversion Burners

From Reynolds Manufacturing Company, Inc., Springfield, Missouri.

We should like the names and addresses of firms making gas warm air furnaces. Also tell us who makes conversion gas burners.

**Ans.—List mailed.**

## Membership in the National W. A. H. A.

From Hanenkratt Plumbing & Heating Company, Paulding, Ohio.

I am interested in joining the National Warm Air Heating Association. Where can I get all information on it?

**Ans.—From the Managing Director, Allen W. Williams, 3440 A. I. U. Building, Columbus, Ohio.**

## "Universal" Gas Ranges

From "Forshaw" of St. Louis.

Who makes "Universal" gas ranges?

**Ans.—Cribben and Sexton Company, 680 North Sacramento, Chicago.**

## "Aero" Line Ventilators

From Bozeman Sheet Metal Works, Bozeman, Montana.

Please tell us who makes the "Aero"-Line Ventilators.

**Ans.—Paul R. Jordon Company, 631 South Delaware Street, Indianapolis, Indiana.**

## Furnace Brushes

From G. O. Crouch & Son, Chattanooga, Tennessee.

Who makes steel brushes for cleaning radiators or warm air furnaces?

**Ans.—Milwaukee Brush Company, 770 Thirtieth Street, and Schaefer Brush Company, 1009 South Second Street, both of Milwaukee, Wisconsin.**

## Stokers

From Moncrief Heating Company, South Bend, Indiana.

Please give us the names and addresses of some stoker manufacturers.

**Ans.—List mailed.**

## "Florence" Oil Heater

From C. A. Whitecraft, LeRoy, Illinois.

I should like to know who makes "Florence" oil heaters.

**Ans.—Florence Stove Company, Boston, Massachusetts.**

## Furnace Rings

From William F. McCormick, York, Nebraska.

Who manufactures furnace rings?

**Ans.—Forest City-Walworth Run Foundries Company, 2500 West 27th Street, Cleveland, Ohio; Douglas and Lomason Company, 5836-38 Lincoln Avenue, Detroit, Michigan, and Kawneer Manufacturing Company, Niles, Michigan.**

## Non-Corrosive Steel Wire

From Fred Magath, Mason City, Iowa.

Who makes non-corrosive steel wire?

**Ans.—Refer to American Steel and Wire Company, 208 South LaSalle Street, Chicago.**

## Address of Automatic Heat Regulator Co.

From Rummel, Inc., South Bend, Indiana.

Where is the Automatic Heat Regulator Company located?

**Ans.—2651 West Harrison Street, Chicago, Illinois.**

## Doors for Furnaces

From E. H. Adrian, Moline, Illinois.

Who makes doors for furnaces?

**Ans.—Acer & Whedon, Medina, New York; Blaw-Knox Company, Pittsburgh, Pennsylvania; Marion Machine Foundry & Supply Company, Marion, Indiana; Springfield Boiler Company, Springfield, Illinois, and Youngstown Engineering Company, Youngstown, Ohio.**

## Klinker Tongs

From The Lennox Furnace Company, Marshalltown, Iowa.

Who makes klinker tongs?

**Ans.—The Hart and Cooley Manufacturing Company, Holland, Michigan; Wilkowski Manufacturing Company, Watertown, Wisconsin; and**

**Cook and Chick Company, 315 Union Park Court, Chicago.**

## Mailing Lists in Chicago; in New York

From Karl R. Kokborg, Buffalo, New York.

What mailing list companies are in Chicago? in New York?

**Ans.—Chicago: Buckley, Dement & Company, 1300 West Jackson Boulevard; Atlas-Robinson Company, 318 West Washington Street; R. L. Polk and Company, 367 West Adams Street. New York: D. H. Ahrend, Inc., 52-58 Duane Avenue, New York City; Boyd's City Dispatch, 114-120 East 23d Street, New York City; Multipost Company, 5 Central Park, Rochester, New York; The W. S. Ponton Company, Inc., 307 Sixth Avenue, New York City, and Peck Distributing Company, 326 9th Street, Brooklyn, New York.**

## Repairs for "Flash" Soft Coal Heater

From Ross Furnace and Repair Company, Sandusky, Ohio.

Where can we get repairs for the "Flash" soft coal heater?

**Ans.—Refer to Excelsior Stove and Manufacturing Company, Quincy, Illinois, and Baker-Nagle Company, Belleville, Illinois.**

## Furnace Vacuum Cleaners

From Ross Furnace and Repair Company, Sandusky, Ohio.

What firms make furnace vacuum cleaners?

**Ans.—Brillion Furnace Company, Brillion, Wisconsin; The Kent Company, Inc., Rome, New York; National Super Service Company, Toledo Factories Building, Toledo, Ohio; B. F. Sturtevant Company, Hyde Park, Boston, Massachusetts.**

## Automatic Humidifier for Furnaces

From Call Hardware Company, Glens Falls, New York.

From a Subscriber.

From Ross Furnace and Repair Company, Sandusky, Ohio.

Who makes automatic humidifiers for warm air furnaces?

**Ans.—List mailed.**

# ASSOCIATION ACTIVITIES



## Committee of Ten Organized in Cincinnati

Perhaps the most outstanding local meeting held in connection with the Committee of Ten—Coal and Heating Industries movement, occurred December 4 in Cincinnati, where the Cincinnati Association of Allied Solid Fuel Heating Industries, to support the National Committee of Ten movement, held an enthusiastic meeting, attended by perhaps 175 outstanding coal and heating representatives of the Cincinnati area.

It was the consensus of opinion that since more than ten groups in Cincinnati are vitally interested in the welfare of the solid fuel industry as well as their own industry, the name "Committee of Ten" should not be adopted and that a title expressive of the entire field of endeavor should be recommended. Therefore the name "Cincinnati Association of Allied Solid Fuel Heating Industries" was temporarily adopted.

Lorin W. Smith, Jr., National Secretary of the Committee of Ten, explained the original inception of the co-ordinated activity between the industries as it was born, in conjunction with an address given before the 12th annual session of the National Coal Association held in Cincinnati, October 23, 1929.

Mr. Smith explained how the National Warm Air Heating Association took up the spirit of the movement and then the gradual falling into activity of the movement by the ten allied industries which today compose the Committee of Ten. These industries are:

National Coal Association.

Anthracite Institute.

American Wholesale Coal Association.

National Retail Coal Merchants' Association.

National Warm Air Heating Association.

Heating and Piping Contractors National Association.

Institute of Boiler and Radiator Manufacturers.

National Sheet Metal Contractors' Association.

Mid-West Stoker Association.

Accessory Manufacturers.

Harvey Manny, representing the National Warm Air Heating Association at the Cincinnati meeting, speaking for the furnace industry, described the original meeting between his group and the National Coal Association in Philadelphia, and explained why the warm air interest believed that such a movement was important.

Mr. Manny then described the warm air industry's interest in this movement as follows:

"The coal man is blamed for our trouble and we are blamed for the coal man's trouble, and it would be a simple matter if the coal man and the heating man could get together.

"The purpose of the Committee of Ten is to do just that thing—to form proper co-operation. Through this co-operation the furnace industry will help to instruct the coal industry just how furnaces are made and how they operate. The coal man may familiarize himself with heating plants and thereby be in a better position to give service to the public.

"The furnace man, through his association with the coal man, can put him in a position to know more about the other fellow's products. Through this co-operation we may all become better acquainted with the thing that up to this time we have been willing to shove off onto each other."

## Michigan S. M. and Roofing Men to Meet March 3, 4, 5

Michigan Sheet Metal and Roofing contractors will hold their 1931 annual convention on March 3, 4 and 5 in Saginaw, Michigan.

This year manufacturers will be permitted to exhibit their products in their rooms privately, but no central display space will be provided.

## Committee of Ten Appoints New Managing Director

At the regular monthly meeting of the Committee of Ten—Coal and Heating Industries held at the Union League Club, Chicago, Wednesday, January 14, the appointment of Mr. Oliver J. Grimes as managing director of the Committee of Ten activities was formally announced.

Mr. Grimes will assume his new duties on March 1, 1931.

Mr. Grimes was born at Mt. Meridian, Indiana, in 1880; served for twelve years in the operating departments of various railroads in Indiana and in the far west; served for twelve years in the reportorial and editorial departments of western newspapers, principally in Salt Lake City, Utah, being principally identified with the political and business sections of the papers.

For the past two years Mr. Grimes has served as executive secretary of the Utah Coal Producers Association.



Sheet Metal Contractors' Association of Wisconsin—February 2-3, 1931, at Milwaukee, Wisconsin. Paul L. Biersach, Secretary, 853 Grant Boulevard, Milwaukee, Wisconsin.

Ohio Sheet Metal Contractors' Association—February 17, 18 and 19, at Columbus, Ohio. J. M. Saunders, Secretary, 215 Plymouth Building, Cleveland, Ohio.

Missouri Sheet Metal Contractors Association—February 24 and 25, in Hotel Statler, St. Louis, Missouri. Luke Tiernan, Jr., Secretary, 4242 West Pine Boulevard, St. Louis, Missouri.

Michigan Sheet Metal and Roofing Contractors—March 3, 4, 5, 1931, at Saginaw, Michigan. Frank E. Ederle, Secretary, Hotel Detroiter, Detroit, Michigan.

Sheet Metal Contractors' Association of Pennsylvania—March 9, 10, 11, 1931, at Helder Hotel, Johnstown, Pennsylvania. M. F. Liebermann, Secretary, 1411 Merchant Street, Ambler, Pennsylvania.

Sheet Metal Contractors' Association of Florida—March 30-31, 1931, at Miami, Florida. G. H. Leavitt, Secretary-Treasurer, 909 Main Street, Tampa, Florida.

National Warm Air Heating Association—April 22 and 23, 1931, at Deshler-Wallick Hotel, Columbus, Ohio. Allan W. Williams, Managing Director, 3440 A. I. U. Building, Columbus, Ohio.

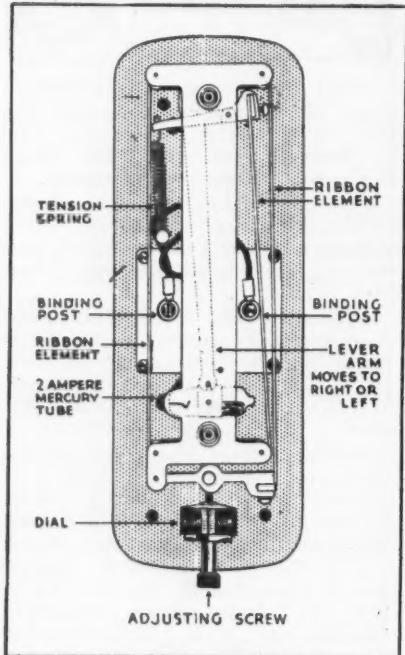
Joint Convention Sheet Metal Contractors' Association of Illinois and National Association Sheet Metal Contractors—May 12-15, 1931, at Chicago, Illinois. A. B. Rysdon, Secretary, Associated Sheet Metal Employers of Chicago, 350 North Clark Street, Chicago, Illinois.

# NEW ITEMS and NEWS ITEMS

## From and about the Manufacturers and Jobbers

### Lewis Corp. Announces a New Humidity Control

The function of the Lewis Humitrol is to maintain the moisture content of the air (relative humidity) within a single room or group of openly connected rooms, by controlling the operation of a unit that adds moisture to the air. It is used for the control of humidity as a thermostat is used for the control of heat. Within the cover is a ribbon type element which expands or contracts as the moisture content of the air varies. This expansion or contraction is multiplied by a lever mechanism to provide sufficient lever action to make and break an electrical contact. Such electrical contact may be used to start and stop a motor,



open or close a Solenoid Valve, or operate a magnetic switch.

The actuating element, 21 inches in length, is made of a special hygroscopic material sensitive to moisture changes.

A tension release pin protects the element against spring tension during times when the relative humidity may exceed 70 per cent due to conditions not under control.

Roller bearings at each bearing point insure complete and free movement of the ribbon element.

A lever arm is actuated by the expansion and contraction of the ribbon element.

A mercury tube of two ampere capacity for 110-volt d.c. or a.c. current, suspended in a carrier, is tilted from the on or off position by the action of the lever arm.

Adjustment of Humitrol may be varied up to 10 per cent higher or lower than the factory setting by turning adjusting screw to right or left.

Range of control is within 3 per cent plus or minus factory setting. Calibrated for 45 per cent relative humidity, the Humitrol will cut in at 42 per cent and out at 48 per cent.

Cover and base are made of aluminum finished in dark baked enamel.

Additional information regarding the application of the Humitrol to specific installations and equipment will be gladly supplied by Lewis Corporation engineers.

### Correction

In reporting the annual convention of the National Warm Air Heating Association several issues back we stated that R. P. Whitmer, of the American Foundry and Furnace Company, Bloomington, Ill., in the manufacturers' meeting spoke about furnace cleaning.

This was in error, as Mr. Whitmer discussed the use of fans in warm air systems. Mr. Whitmer explained first the American Heat Hustler, a fan to force air through a single warm air pipe; second, the Superior Accelerator Disc Fan, booster system for Gravity Warm Air Furnaces; third, the American companies Standard Code Filtered-Aire Cabinet, Standard Code Fan Filtered Cabinet, the Heavy Duty Fan Filtered Cabinet, and finally the June-Aire Heating System for fine homes.

We beg your pardon!

### Penn Supply Co. Opens New Wilmington Warehouse

The Penn Tinsmith's Supply Company, Philadelphia, has opened a new distributing warehouse at 107 East 3rd St., Wilmington, Del.

The warehouse will be operated under the name Dependable Supply Company.

The warehouse will stock all roofing and sheet metal specialties manufactured by the Penn company.

Bernard J. Silbermann is the manager.

### Harry Beaman Sells Interest in Allred

Word has just been received that Harry Beaman has sold his interests in the Allred Manufacturing Company of Indianapolis to Bruce Waddell. Mr. Waddell will continue the business much the same as before.

Mr. Beaman has made no announcement as yet of his future plans.

### Milcor Offers New Booklet on Metal Ceilings

"Beautiful Ceilings and Walls of Metal" is the title of a sixteen-page booklet recently produced by the Milcor Steel Company. It not only contains many actual illustrations showing the charming and dignified effects to be secured by the use of metal ceilings, but also explains the practical advantages of using metal ceilings and walls for schools, churches, banks, hotels, theatres, clubs, restaurants, residences, and all types of public buildings.

Steel ceilings and walls are steadily increasing in popularity because they are easily erected and are the most permanent type known. The Milcor Steel Company offers a wide range of artistic designs that will satisfy the most discriminating taste.

### H. N. Taylor of the N. & G. Taylor Dies in Philadelphia

Hollinshead N. Taylor, 51, former president of the N. & G. Taylor Co., Philadelphia, with tin plate mills at Cumberland, Md., now associated with Corrigan, McKinney Steel Co., Cleveland, died suddenly in Philadelphia, Jan. 15.

Born in Philadelphia in 1879, he was educated at Germantown, academy and the University of Pennsylvania. After graduation in 1901 he became affiliated with the Taylor company, of which his father was head, whom he later succeeded. He later was succeeded in the presidency by William McLean but remained identified with the company.

For two years Mr. Taylor was chairman of the committee on simplification of terne plate of the department of commerce. He served for 12 years as president of the Drop Forge Supply Association. He was president of Taylor-Offutt Coal Co. and director of Copper Plate Sheet & Tube Co.

## Silent Automatic Holds Third Annual National Convention

Representatives from the eight factory branches and more than 300 dealer organizations of the Silent Automatic Corporation, on January 19-21 inclusive, gathered in Detroit, Mich., the home of Silent Automatic, for the Third Annual National Convention of the company. Convention headquarters were at the Hotel Statler.

In this convention, Silent Automatic celebrated the record-breaking results of another year of world leadership in the domestic oil burner industry and presented its dealers with comprehensive plans for even more profitable merchandising in 1931. Besides dealers and branch managers, there were present a number of All Star Salesmen who won their right to attend the convention by their success in exceeding individual quotas during the Jamboree, a profit-sharing contest which resulted in 9000 sales from July 14th through the end of October.

Speaking of his company's present position and its situation in the industry, President Walter F. Tant made the following statement, "We have come through 1930, one of the most devastating years ever known to American business, in better condition than ever before.

"A remarkably sound and loyal dealer organization of national scope has been increased and strengthened materially. This convention marks the completion of our first year of occupancy of the largest factory building in the world devoted exclusively to the manufacture of domestic oil burners, and in which is found the most completely equipped engineering and research laboratory in the industry.

"In spite of the depressing conditions that prevailed throughout the past year, Silent Automatic materially increased its expenditures along the lines of advertising and promotional efforts and a large measure of our success, under such trying conditions, is attributable to this policy. Consistent newspaper advertising, tied in with direct mail, plus dealer and branch campaigns and trade paper advertising, brought in business even though it was hard to get.

## Deshler Foundry & Machine Works Making New X-L-All

The Deshler Foundry and Machine Works, Deshler, Ohio, is marketing an improved X-L-All furnace containing some important features.

According to the manufacturer the important feature of the furnace is an extra large combustion chamber. The furnace is a steel plate, welded, radiator type unit. The features of this

furnace are outlined in an illustrated catalogue which is free to any interested dealer.

Regarding the furnace the manufacturer says:

"We have improved the X-L-ALL to such an extent that, with the extra large combustion chamber used, we gain much added efficiency.

"This efficiency is also assisted by the size of the firepot and grate. By the oversize construction of the X-L-ALL furnace, we gain additional room for expanding gasses, thus utilizing all the heat units. Heat is also saved by the heat trap attached to the oversize combustion chamber which increases radiation and re-employs heat which



would otherwise be wasted up the chimney.

"The large combustion chamber has other features—the principal one being the elimination of all chance of the furnace buckling due to 'hot spots' which are unevenly heated areas often found in furnaces with undersize combustion chambers. These 'spots' are the cause of furnaces burning out and warping.

"The fire brick lining of the X-L-ALL is two inches. These high quality bricks are made to stand 3000 deg. of heat and are, therefore, much less susceptible to the dangers of cracking and fusing together.

"By welding together 8 gauge Keystone Steel sheets, we produce a furnace that, for rigidity, efficiency and long service, will meet every exacting demand.

"There are no rivets to work loose, and the furnace sheets are free from strain due to the welded portions being stronger than the metal itself. The hot formed, dished tank heads also are free from any internal stresses.

"Double welding is employed on every X-L-ALL furnace."

## Henry F. & F. Co. to Market New Gas Furnace

A new gas furnace is about to be placed on the market by The Henry Furnace and Foundry Company of Cleveland, Ohio, manufacturers of the well known line of Moncrief Furnaces.

This new gas furnace is of original design, and tests just completed by the laboratory of the American Gas Association at Cleveland reveal a very high ratio of efficiency.

The casing is extremely well insulated and presents a most attractive appearance with its rich deep apple green finish and jet black trimmings.

Three sizes will be made with 50,000, 100,000 and 150,000 B. t. u. output respectively. Each will be made in two types, for gravity circulation and completely electrically equipped, including blower for forced air circulation.

Literature is being prepared and production will be under way shortly.

## Hall-Neal Introduces New Victor with Fins

Hall-Neal Furnace Company, Indianapolis, is now mailing out to interested dealers an illustrated catalogue showing the new Victor furnace. The new Victor is equipped with heat radiating fins.

According to the manufacturer the advantages of the furnace are:

1. Air cannot pass inside the casing without coming within 2½ inches of some hot surface.
2. The air is warmed to higher temperatures, causing higher velocities.
3. Greatly increased air circulation is created.
4. Register temperatures are higher.
5. Cool casings are caused by interception of the heat.
6. Heating efficiency is increased 20 per cent.

In addition, a special base ring is provided for greater rigidity. The furnace is built of heavy boiler plate welded and riveted. The boiler plate radiator is welded and riveted. The grate is of a heavy flat type for easy cleaning. The water pan has increased capacity. A fire brick lining 2 inches thick is used. A patented smoke consumer is incorporated in the feed door.

The Hall-Neal Company will be pleased to mail this catalogue to any dealer interested.

## C. L. Epps Wants Catalogues and Prices

C. L. Epps, 229 North Washington Street, Van Wert, Ohio, writes that his shop and office were recently destroyed by fire and he would like to get catalogues and prices from manufacturers and jobbers.

# MIDLAND

## Offers—

Quick service on four complete lines of riveted gas tight steel furnaces—El Capitan—El Dorado—Truesteel—Ben Franklin.

A complete advertising and merchandising service that will fit your business.

An engineering service that is practical and always at the command of Midland Dealers.

A desirable and convenient time payment plan that is bound to increase your sales.

**MIDLAND FURNACE CO.**  
COLUMBUS, OHIO

“Yours for  
Cleaner Heat”

## Here's the X-L-ALL WARM AIR Steel Welded FURNACE

*It Will Meet Your Requirements in Every Respect*

*Has Many Outstanding Features:*

*Large Combustion Chamber! RIGIDLY CONSTRUCTED*

*Large Firepot enables the efficiency of this Furnace to be perfect. Note Heat Trap attached to oversized Combustion Chamber.*

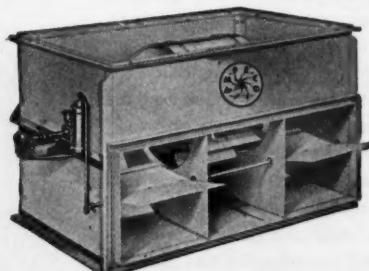
*Has Heavy Grates that will wear for years.*



*Send for This Catalog Which Describes the Furnace Completely*

*For Dealers Who Are Aggressive We Have an Interesting Proposition!*

**DESHLER FOUNDRY & MACHINE WORKS**  
*Established in 1872*  
140 SOUTH EAST AVE. DESHLER, OHIO



## This Blower Gets YOU the Business

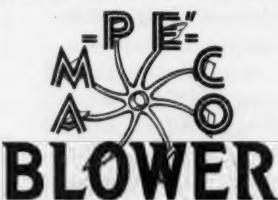
*—the last word in forced air circulation*

HERE'S the only blower that positively provides a fully-balanced distribution of air to both inlets — vital to proper blower operation. The improved Ampeco Rotary Blower assures positive and uniform heat delivery. Mechanical control; quiet; non-leaking ring oil bearings; low priced; a tremendous business-getter and money-maker for the live dealer.

Built with or without dampers which open automatically when the blowers stop, permitting gravity circulation. Get your share of this profitable forced air business. Write for literature and full information today.

**AMERICAN MACHINE PRODUCTS COMPANY**  
Marshalltown, Iowa

For 15 Years Manufacturers of Precision Products



## A Heat Hustler Fan Forces Air Through a Single Warm Air Pipe

*Heats garages, sun porches and other rooms that will not heat by gravity. Mounts directly in the warm air pipe. Draws heat from the furnace and forces it into the hard-to-heat room. Quick heat for a bathroom.*

**Four reasons why you should use the American Heat Hustler:**

1. It uses a positive pressure, rotary type fan.
2. Motor is outside the warm air flow, adding greatly to life of motor and leaving as much space for gravity air flow as before the heat Hustler was installed.
3. It is quiet.
4. Furnished for either automatic or manual control.

Price list, with descriptive literature showing different models, sizes, etc., will be sent you by return mail upon receipt of your request. CLIP AND SEND THIS AD IN NOW!



Patent No.  
1,788,067

**AMERICAN FOUNDRY & FURNACE COMPANY**

Bloomington,

*World's largest manufacturers  
of blower furnace systems*

Illinois

Mention AMERICAN ARTISAN in your reply—Thank you!

*Our one-man outfit makes low overhead*

**T**HAT is what one dealer did in 1930 with his Super Suction Cleaner. Another, with only 261 cleanings sold fifty-two new furnaces. Does that sound good to you?

There is plenty of business for hustling owners of these speedy, one-man outfits. Make 1931 your banner year. Start today to book cleaning, spot repair work and line up live prospects for new furnaces.

*Our Plan Book—free for the asking—tells how to get quick action on these new profits and keep your shop busy all year.*

**THE NATIONAL SUPER SERVICE CO.**  
1944 North 13th Street Toledo, Ohio

# “WHICH will you do?”

is a new selling help designed to boost the business of contractors using Anaconda Copper. Copies of this folder and others are supplied free of charge — each specially imprinted with the individual contractor's name and address. Write today for a supply. The American Brass Co., Waterbury, Conn.

Which  
will YOU  
do - -

**ANACONDA  
COPPER**

*Say you saw it in AMERICAN ARTISAN—Thank you!*

# COMING —a New **SILENTAIR** PRODUCT

*See American Artisan  
February 16*

# **SILENTAIR** CONDITIONING UNITS

*Manufactured by*

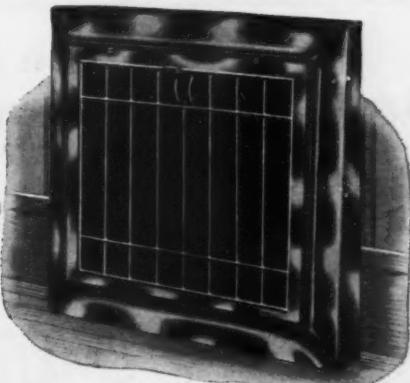
**A. GEHRI & CO., INC.**

Tacoma

*Established 1892*

Washington

for  
1931



New  
Lines

Streaking of walls is ABSOLUTELY PREVENTED by the expanding joint which connects the register face and register box. This is an exclusive and guaranteed feature of the



**REGISTER**

*Write for 1931 catalog and price list showing complete line including the new shallow steel floor register and steel cold air face*

**ROCK ISLAND REGISTER CO.**

Rock Island, Ill.

Please send me your 1931 catalog and price list.

Name \_\_\_\_\_

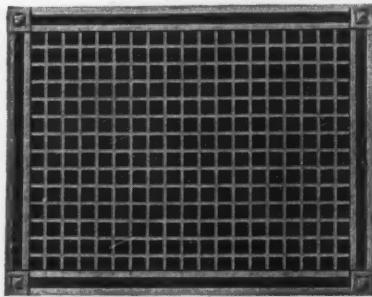
Address \_\_\_\_\_

Town \_\_\_\_\_ State \_\_\_\_\_

## Grilframe

(Trade Mark)

### THE NEW GRILLE CONSTRUCTION

*Beautiful—Convenient—Economical*

#### "GRILFRAME"

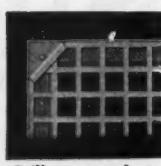
is completely assembled from stock parts. This new method makes possible 48 hour service

Distributors are being appointed in principal cities

SEND FOR CATALOG



"Grilframe" parts  
ready for assembly  
(Front view)



Grille secured to  
frame with lug  
(Back view)

## Aeroplane

ROTARY

## VENTILATOR



*Write  
for  
complete  
catalog  
today*

THIS is a top balanced ventilator that is free swinging, perfectly balanced and sensitive to the lowest air movements.

THE main bearing is our own patented design. Simple and absolutely reliable under all conditions. It is of special bronze on steel, non-corrosive and of the one-ball type. It is practically frictionless. The Aeroplane is a correctly designed, highly efficient well made ventilator. It is well braced, reinforced with riveted steel segments and riveted and seamed throughout. You can sell it with confidence that it will do its work well and last long.

PAUL R. JORDAN & CO.  
630 South Delaware St. Indianapolis, Ind.

## H & K GRILLES

H & K grilles are well known throughout the country and for excellence of workmanship and beauty of design are not surpassed. Grilframe construction is adapted to all of H & K grille designs and rounds out the line of our punched metal grilles. Ask for catalog No. 28.

## PERFORATED METAL

EVERY type of perforated metal from the finest to the largest standard sizes are within the scope of our equipment. This means round, oblong, slot, square holes and many special shapes suitable for metal of different kinds and thicknesses.

*Write us for perforated metal  
of every sort*

## THE HARRINGTON & KING PERFORATING COMPANY

5649 Fillmore Street

Chicago, Ill.

New York Office: 114 Liberty Street

## RYERSON

IMMEDIATE SHIPMENT FROM STOCK

More than twenty kinds of prime quality sheets are carried in stock. There is a special sheet for every purpose. Also Bars, Angles, Rivets, Bolts, Tools and Metal-Working Machinery.

Write for Journal and Stock List

JOSEPH T. RYERSON & SON INC.

Chicago	Detroit	Milwaukee	St. Louis	Jersey City	Cincinnati	Buffalo	Philadelphia	Boston
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## SHEETS

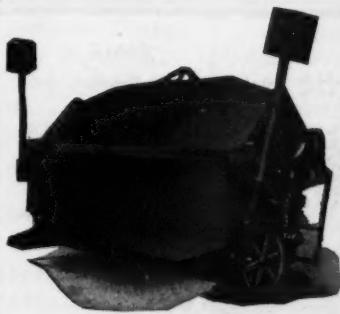
## File This Copy

When you have finished reading this issue of AMERICAN ARTISAN, pass it on to others in your organization, marking the articles in which they should be particularly interested.

Then file it for future reference. You never know when you will encounter a problem in your business that is covered in this very issue.

## CHICAGO STEEL BENDING BRAKES AND FORMING PRESSES

The perfected result of over 30 years experience in the manufacture of sheet metal bending machines. Over 25,000 machines in use.



POWER BRAKE

- Hand Brakes
- Cornice Brakes
- Power Brakes
- Box and Pan Brakes
- Forming Presses
- Special Brakes and Presses



FORMING PRESS

The most complete and up-to-date line of sheet and plate bending and forming machines in the world. Lengths, 3 to 16 feet, with capacity to bend from the lightest metals up to  $\frac{1}{2}$  in. plate, cold.

**DREIS & KRUMP MANUFACTURING CO.**

7404 Loomis Street • Chicago



### Yoder L-300 Stove Pipe Seaming Machine

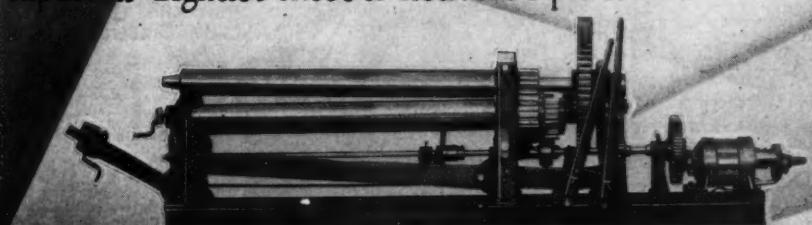
THIS machine is built with a combination set of 3 pairs of dies, and completely forms the edges of Stove Pipe Sheets, ready for seaming. The bed is of ample proportions, cast in one piece, including all bearings. The shafts are large and all parts sufficiently heavy to permit of rapid operation and produce accurate work.

The dies are accessible, permitting of quick and easy adjustment and are of sufficient length to seam 31" sheets, of No. 22 gauge or lighter. Curling rolls can be attached to frame of the machine, permitting seaming and curling pipe with one handling. Net weight—2700 pounds.

**THE YODER COMPANY**  
W. 55 ST. and WALWORTH AVE.  
CLEVELAND, OHIO  
PLATE AND SHEET METAL MACHINERY SPECIALISTS

### PLATE BENDING ROLLS

Capacities - Lightest sheet to heaviest plate



Our Line  
Light and heavy  
machinery for all  
classes of sheet  
metal, plate and  
structural  
work

**BERTSCH & COMPANY**  
Cambridge City, Indiana

Say you saw it in AMERICAN ARTISAN—Thank you!

# ~ MARKET QUOTATIONS ~

**AMERICAN ARTISAN** is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

**NOTE—These prices are Chicago Warehouse Prices to which must be added territory differentials**

## METALS

### PIG IRON

Chicago Fdy., No. 2	\$17.50
Southern Fdy. No. 2	\$17.01 to 17.51
Lake Superior Charcoal	27.04
Malleable	17.50

### FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC 20x28	112 sheets.....\$22.50
IX 20x28	40-lb. 112 sheets.....26.50
IXX 20x28	25-lb. 112 sheets.....20.50
XXX 20x28	25-lb. 112 sheets.....23.50
XXXX 20x28	20-lb. 112 sheets.....19.00
V 20x28	20-lb. 112 sheets.....22.00

### TERNE PLATES

IC 20x28, 40-lb.	112 sheets.....\$24.00
IX 20x28, 40-lb.	112 sheets.....26.50
IXX 20x28	25-lb. 112 sheets.....20.50
XXX 20x28	25-lb. 112 sheets.....23.50
XXXX 20x28	20-lb. 112 sheets.....19.00
V 20x28	20-lb. 112 sheets.....22.00

"ARMCO" INGOT IRON PLATES	
No. 8 ga.—110 lbs.	\$4.15
5/16 in.—100 lbs.	4.05
1/4 in.—100 lbs.	3.85

### COKE PLATES

Cokes, 80 lbs., base, 20x28	....\$12.00
Cokes, 90 lbs., base, 20x28	....12.20
Cokes, 100 lbs., base, 20x28	....13.75
Cokes, 107 lbs., base, IC,	
20x28	....12.75
Cokes, 185 lbs., base, IX,	
20x28	....14.75
Cokes, 155 lbs., base, 2X,	....8.50
Cokes, 175 lbs., base, 3X,	....9.35
Cokes, 195 lbs., base, 4X,	
56 sheets	....10.25

### BLUE ANNEALED SHEETS

Base 10 ga.—per 100 lbs.	\$8.35
"Armo" 10 ga.—per 100 lbs.	4.15

### ONE PASS COLD ROLLED BLACK

No. 18-20	per 100 lbs. \$8.75
No. 22	per 100 lbs. 5.70
No. 24	per 100 lbs. 5.75
No. 26	per 100 lbs. 5.85
No. 27	per 100 lbs. 5.90
No. 28	per 100 lbs. 4.00

### GALVANIZED

No. 16	per 100 lbs. \$8.85
No. 18	per 100 lbs. 5.95
No. 20	per 100 lbs. 4.15
No. 22	per 100 lbs. 4.20
(Standard differentials on extras to apply)	
No. 24	per 100 lbs. 5.55
No. 26	per 100 lbs. 4.60
No. 27	per 100 lbs. 4.70
No. 28	per 100 lbs. 4.85
"Armo" 24	per 100 lbs. 5.95

### BAR SOLDER

Warranted 50-50....per 100 lbs.	\$18.00
45-55	per 100 lbs. 17.00
48-52	per 100 lbs. 17.75
Plumber's	per 100 lbs. 15.50

### ZINC

In Slabs	\$5.00
----------	--------

### SHEET ZINC

Cask Lots (600 lbs.)	\$12.00
Sheet Lots (100 lbs.)	18.00

### BRASS

Sheets, Chicago base.....	17 1/4 c
Tubing, brazed, Chicago base.....	24 1/2 c
Tubing, seamless, Chicago base.....	22 c
Wire, Chicago base.....	17 1/4 c
Rods, Chicago base.....	15 1/2 c

## COPPER

Sheets, Chicago base.....	19 1/2 c
Tubing, seamless, Chicago base.....	22 1/2 c
Wire, plain rd., 3 B. & S. Ga. and heavier	12 1/2 c

## LEAD

American Pig	\$6.00
Bar	7.50

## TIN

Bar Tin	per 100 lbs. \$82.00
Pig Tin	per 100 lbs. 31.00

## ASBESTOS

Paper up to 1/16.....	5c per lb.
Roll board.....	6c per lb.
Mill board 3/32 to 1/4.....	6c per lb.
Corrugated paper (250 sq. ft. per roll).....	\$5.00 per roll

## ASBESTOS SEGMENTS

8 in.	per 25 sets \$1.85
9 in.	per 25 sets 2.10
10 in.	per 25 sets 2.35
12 in.	per 25 sets 2.65

## CEMENT FURNACE

Copper Footing	....41%
----------------	---------

## CORNICE BRAKES

Chicago Steel Bending	Net
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## CUT-OFFS

Cal., plain, round or cor. rd.	30%
28 gauge	35%

## DAMPERS

Yankee Warm Air	
7 inch, doz.	\$1.60
8 inch, doz.	2.20
9 inch, doz.	2.60
10 inch, doz.	3.00
12 inch, doz.	5.50
14 inch, doz.	9.00

## EAVES TROUGH

Galv. Crimpedge, crated.....	75-15%
Zinc	60%

## ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round flat Crimp.	60-10%
28 gauge	60-10%
26 gauge	50%
24 gauge	15%

## Galv. Terne Steel

Plain Rd. and Rd. Corr.	
28 gauge	60-10%
26 gauge	50%
24 gauge	15%

## Square Corrugated

28 gauge	55%
26 gauge	40%

## Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.	45%
Nested solid	70 & 5%

## Sq. Corr., A. & B. & Octagon

28 gauge	55%
26 gauge	40%

## Porfico

1, 1 1/4, 1 1/2 inch.....	45%
1 1/2, 2, 2 1/2 inch.....	55%

## Copper

16 oz. all designs.....	50%
-------------------------	-----

## Zinc

All styles.....	60%
-----------------	-----

## PASTE

Asbestos Dry Paste	
200-lb. barrel	\$15.00
100-lb. barrel	7.75
50-lb. pail	4.50
25-lb. pail	2.50
10-lb. bag	1.20
5-lb. bag	0.60

## PIPE

Double Wall Pipe and Fittings	60%
Single Wall Pipe, Round Galvanized	60%
Galvanized and Tin Fittings	60%

## Galvanized

**Rush Service**  
on All Warm  
Air Heating Supplies

~

**REGISTERS**

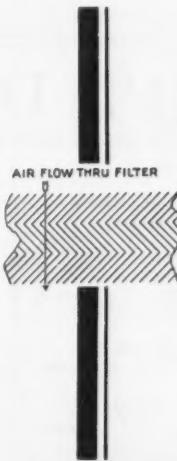
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STEEL  
SERVICE**



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for Warm Air Heating Systems

meet the demand for an efficient air cleaner that will not obstruct the free passage of air. The illustration shows the principle on which the Kleenaire operates. Dust is collected not in the spaces provided for air flow, but on the flat intervening surfaces, each of which is a network of fine wires which arrest the dust as it spirals against these surfaces. Kleenaire Filters are easy to install and easy to clean.

Write for price list and table of  
filtering capacities.

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STEVENS POINT, WIS.

**LAMSON & SESSIONS CO.**  
CLEVELAND, OHIO

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Permanently  
Perfect Operating  
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Clothes Chute Doors

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Registers of every type, size  
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Ventilating.

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FURNACE CEMENT

Roof Cement—Stove Putty  
Plumbers Putty

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HEAT BOOSTER

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SHEETS**

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CORRUGATED**

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**Air Cleaners**

American Fly. & Furnace Co., Bloomington, Ill.  
Independent Air Filter Co., Chicago, Ill.  
Kleenaire Filter Co., Stevens Point, Wis.  
Meyer & Bro. Co., F., Peoria, Ill.  
Watt Mfg. Co., Sterling, Ill.

**Air Washers**

A. Gehri & Co., Tacoma, Wash.  
Watt Mfg. Co., Sterling, Ill.

**Aluminum Sheets**

J. M. & L. A. Osborn Co., Cleveland, Ohio

**Asbestos—Liquid**

Technical Products Co., Pittsburgh, Pa.

**Asbestos Paper**

Wilson, Grant, Inc., Chicago, Ill.

**Blast Gates**

Berger Bros. Co., Philadelphia, Pa.

**Blowers—Furnace**

American Fly. & Furnace Co., Bloomington, Ill.

American Machine Products Co., Marshalltown, Iowa

A. Gehri & Co., Tacoma, Wash.

Brundage Co., Kalamazoo, Mich.

Lakeside Co., Hermansville, Mich.

Watt Mfg. Co., Sterling, Ill.

**Bolts—Stove**

Lemson & Sessions Co., Cleveland, Ohio  
Ryerson & Son, Inc., Joe T., Chgo., N. Y., St. L. Det., Cleve.

**Brakes—Bending**

Dreis & Krump Mfg. Co., Chicago, Ill.  
Interstate Machinery Co., Chicago, Ill.  
Ryerson & Son, Inc., Joe T., Chgo., N. Y., St. L. Det., Cleve.  
Peck, Stow & Wilcox Co., Southington, Conn.

**Brakes—Cornice**

Dreis & Krump Mfg. Co., Chicago, Ill.

**Brass and Copper**

American Brass Co., Waterbury, Conn.  
Chase Brass & Copper Co., Waterbury, Conn.  
Copper & Brass Research Association, New York, N. Y.

**Cans—Garbage**

Diener Mfg. Co., G. W., Chicago, Ill.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio

**Castings—Malleable**

Fanner Mfg. Co., Cleveland, Ohio

**Ceilings—Metal**

Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Chaplets**

Fanner Mfg. Co., Cleveland, Ohio

**Cleaners—Vacuum**

Brilliant Furnace Co., Brilliant, Wis.  
National Super Service Co., Toledo, Ohio

**Copper**

American Brass Co., Waterbury, Conn.  
Chase Brass & Copper Co., Waterbury, Conn.  
Rockford Sheet Steel Co., Rockford, Ill.

**Cornices**

Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Cut-offs—Rain Water**

Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Dampers—Quadrants—Accessories**

Aeolus Dickinson Co., Chicago, Ill.  
Hart & Cooley Co., Holland, Mich.  
Howes Co., S. M., Boston, Mass.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.  
Parker-Kalon Corp., New York, N. Y.

**Dampproofings**

Lastik Products Corp., Pittsburgh, Pa.

**Damper Regulators**

Sheer Co., H. M., Quincy, Ill.

**Diffuser—Air Duct**

Aeolus Dickinson Co., Chicago, Ill.

**Drills—Electric**

Ryerson & Son, Inc., Joe T., Chgo., N. Y., St. L. Det., Cleve.  
J. M. & L. A. Osborn Co., Cleveland, Ohio  
The Stanley Electric Tool Co., New Britain, Conn.

**Drive Screws—Hardened Metallic**

Parker-Kalon Corp., 190 Varick St., New York

**Eaves Trough**

Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Chase Brass & Copper Co., Waterbury, Conn.  
Chicago Metal Mfg. Co., Chicago, Ill.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.  
Rockford Sheet Steel Co., Rockford, Ill.

**Elbows and Shoes—Conductor**

Aper Gutter Hanger Corp., New York, N. Y.  
Barnes Metal Products Co., Chicago, Ill.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.  
Rockford Sheet Steel Co., Rockford, Ill.

**Filters—Furnace**

Independent Air Filter Co., Chicago, Ill.  
Kleenaire Filter Co., Stevens Point, Wis.

**Fittings—Conductor**

Barnes Metal Products Co., Chicago, Ill.  
Braden Mfg. Co., Terre Haute, Ind.  
Chicago Metal Mfg. Co., Chicago, Ill.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.  
Chicago Metal Mfg. Co., Chicago, Ill.

**Fluxes—Soldering**

Kester Soldering Co., Chicago, Ill.

**Furnace Cement**

Connors Paint Mfg. Co., Wm., Troy, N. Y.

Lastik Products Corp., Pittsburgh, Pa.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

Technical Products Co., Pittsburgh, Pa.

**Furnace Chain**

Hart & Cooley Co., Holland, Mich.

**Furnace Cleaners—Suction**

Brilliant Furnace Co., Brilliant, Wis.  
National Super Service Co., Toledo, Ohio

**Furnace Fans**

A-C Mfg. Co., Pontiac, Ill.  
American Fly. & Furnace Co., Bloomington, Ill.  
Brundage Co., The, Kalamazoo, Mich.  
Lakeside Co., Hermansville, Mich.  
Robinson Co., A. H., Massillon, Ohio  
Watt Mfg. Co., Sterling, Ill.

**Furnace Filters**

Independent Air Filter Co., Chicago, Ill.  
Kleenaire Filter Co., Stevens, Point, Wis.

**Furnace Pokers**

Fanner Mfg. Co., Cleveland, Ohio

**Furnace Pulleys**

Hart & Cooley Co., Holland, Mich.

**Furnace Regulators**

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Noll Regulator Co., Youngstown, Ohio  
Sheer Co., H. M., Quincy, Ill.  
White Mfg. Co., Minneapolis, Minn.

**Furnace Rings**

Forest City-Walworth Run Foundries Co., Cleveland, Ohio

**Furnaces—Gas**

Calkins & Pearce, Columbus, Ohio  
Lennox Furnace Co., Marshalltown, Iowa  
Robinson Co., A. H., Massillon, Ohio  
Rudy Furnace Co., Dowagiac, Mich.  
Wise Furnace Co., Akron, Ohio

**Furnaces—Oil Burning**

Motor Wheel Corp., Heater Div., Lansing, Mich.

**Furnaces—Warm Air**

American Furnace Co., Gadsden, Ala.  
American Fly. & Furnace Co., Bloomington, Ill.  
American Furnace Co., St. Louis, Mo.  
The Beckwith Co., Dowagiac, Mich.  
Brilliant Furnace Co., Brilliant, Wisc.  
Deshler Foundry & Machine Works, Deshler, Ohio  
Enterprise Boiler & Tank Works, Chicago, Ill.

Forest City-Walworth Run Fdy., Cleveland, Ohio  
Fox Furnace Co., Elyria, Ohio  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
London Furnace Co., London, Ohio  
Lennox Furnace Co., Marshalltown, Iowa

Syracuse, N. Y.  
May Fliebeger Furnace Co., Newark, Ohio  
Meyer Furnace Co., The, Peoria, Ill.  
Midland Furnace Co., Columbus, Ohio  
Motor Wheel Corp., Heater Div., Lansing, Mich.

Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Peerless Foundry Co., Indianapolis, Ind.

Premier Warm Air Heater Co., Dowagiac, Mich.  
Rybolt Heater Co., Ashland, Ohio  
Rudy Furnace Co., Dowagiac, Mich.  
Schwab Furnace & Mfg. Co., Milwaukee, Wis.  
Standard Fdy. & Furnace Co., De Kalb, Ill.  
Success Heater Mfg. Co., Des Moines, Iowa  
Waterman-Waterbury Co., Minneapolis, Minn.  
Western Steel Products Co., Duluth, Minn.

Wise Furnace Co., Akron, Ohio

**Gas Burning Attachments**

Calkins & Pearce, Columbus, Ohio

**Grilles**

Auer Register Co., Cleveland, Ohio  
Harrington & King Perfoming Co., Chicago, Ill.  
Hart & Cooley Co., New Britain, Conn.  
Independent Register & Mfg. Co., Cleveland  
Tuttle & Bailey Mfg. Co., Chicago, Ill.  
U. S. Register Co., Battle Creek, Mich.

**Guards—Machine and Belt**

Harrington & King Perfoming Co., Chicago, Ill.

**Handles—Boiler**

Berger Bros. Co., Philadelphia, Pa.

**Handles—Soldering Iron**

Hyro Mfg. Co., New York, N. Y.

**Handles—Furnace Door**

Fanner Mfg. Co., Cleveland, Ohio

**Hangers—Eaves Trough**

Aper Gutter Hanger Corp., New York, N. Y.  
Berger Bros. Co., Philadelphia, Pa.  
Chase Brass & Copper Co., Waterbury, Conn.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Heat Regulation Systems**

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
Noll Regulator Co., Youngstown, Ohio  
Sheer Co., H. M., Quincy, Ill.  
White Mfg. Co., Minneapolis, Minn.

**Heaters—Cabinet**

Fox Furnace Co., Elyria, Ohio  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.  
Motor Wheel Corp., Heater Division, Lansing, Mich.  
Waterman-Waterbury Co., Minneapolis, Minn.

**Heaters—School Room**

Meyer Furnace Co., The, Peoria, Ill.  
Western Steel Products Co., Duluth, Minn.  
Waterman-Waterbury Co., Minneapolis, Minn.

**Humidifiers**

Automatic Humidifier Co., Cedar Falls, Iowa  
Diener Mfg. Co., G. W., Chicago, Ill.  
Meyer & Bro. Co., F., Peoria, Ill.  
Sheer Co., H. M., Quincy, Ill.  
Sallada Mfg. Co., Minneapolis, Minn.

**Lath—Expanding Metal**

Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Machines—Crimping**

Bertsch & Co., Cambridge City, Ind.  
Yoder Co., The, Cleveland, O.

**Machinery—Culvert**

Bertsch & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.

**Machinery—Rebuilt**

Interstate Machinery Co., Chicago

**Machines—Tinsmith's**

Bertsch & Co., Cambridge City, Ind.  
Dreis & Krump Mfg. Co., Chicago, Ill.  
Hyro Mfg. Co., New York, N. Y.  
Interstate Machinery Co., Chicago, Ill.  
Marshalltown Mfg. Co., Marshalltown, Iowa

Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Ryerson & Son, Inc., Joe T., Chgo., N. Y., St. L. Det., Cleve.

The Stanley Electric Tool Co., New Britain, Conn.

Whitney Mfg. Co., W. A., Rockford, Ill.  
Yoder Co., The, Cleveland, O.

**Metals—Perforated**

Harrington & King Perfoming Co., Chicago, Ill.

**Miters—Eaves Trough**

Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Braden Mfg. Co., Terre Haute, Ind.  
Milcor Steel Co., Mill. Canton, Chgo., La Crosse, K. C.

**Nails—Copper and Brass**

Chase Brass & Copper Co., Waterbury, Conn.

(Continued on page 54)

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# BUYERS' DIRECTORY

(Continued from page 52)

**Nails—Hardened Masonry**  
Parker-Kalon Corp., New York, N. Y.

**Oil Burners**  
Berryman System of Oil Heating, Inc., Chicago, Ill.  
Bettendorf Mfg. Co., Bettendorf, Iowa  
Bock Oil Burner Co., Madison, Wis.  
McIlvaine Burner Corp., Evanston, Ill.  
Silent Automatic Corp., Detroit, Mich.

**Paint**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Patterns—Boat**  
Thompson Boat & Pattern Co., Decorah, Iowa

**Perforated Metals**  
Harrington & King Perforating Co., Chicago, Ill.

**Pipe and Fittings—Furnace**  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Meier & Bro. Co., F., Peoria, Ill.  
Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.  
Osborn Co., The J. M. & L. A., Cleveland, Ohio  
Peerless Foundry Co., Indianapolis, Ind.

**Pipe and Fittings—Stove**  
Meyer & Bro. Co., F., Peoria, Ill.  
Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Pipe—Conductor**  
Barnes Metal Products Co., Chicago, Ill.  
Berger Bros. Co., Philadelphia, Pa.  
Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Pipe—Spiral**  
Chicago Metal Mfg. Co., Chicago, Ill.

**Punches**  
Bertsch & Co., Cambridge City, Ind.  
Hyro Mfg. Co., New York  
Interstate Machinery Co., Chicago, Ill.  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.  
W. A. Whitney Mfg. Co., Rockford, Ill.

**Punches—Combination Bench and Hand**  
Hyro Mfg. Co., New York, N. Y.

**Punches—Hand**  
Hyro Mfg. Co., New York, N. Y.  
W. A. Whitney Mfg. Co., Rockford, Ill.

**Putty—Stove**  
Connors Paint Mfg. Co., Wm., Troy, N. Y.

**Radiator Cabinets**  
Hart & Cooley Co., Holland, Mich.

**Ranges—Gas**  
The Beckwith Co., Dowagiac, Mich.  
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.

**Registers—Warm Air**  
Auer Register Co., Cleveland, Ohio  
Forest City-Walworth Run Foundries Co., Cleveland, Ohio  
General Products Corp., Indianapolis, Ind.  
Hart & Cooley Co., Holland, Mich.  
Henry Furnace & Fdy. Co., Cleveland, Ohio  
Independent Register & Mfg. Co., Cleveland, Ohio  
Meyer & Bro. Co., F., Peoria, Ill.  
Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.  
Rock Island Register Co., Rock Island, Ill.  
Symonds Register Co., St. Louis, Mo.  
Tuttle & Bailey Mfg. Co., Chicago, Ill.  
United States Register Co., Battle Creek, Mich.

**Register Shields**  
General Products Corp., Indianapolis, Ind.

**Registers—Wood**

American Wood Register Co., Plymouth, Ind.  
Auer Register Co., Cleveland, Ohio  
Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Regulators—Heat**  
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.  
H. M. Sheer Co., Chicago, Ill.  
White Mfg. Co., Minneapolis, Minn.

**Ridging**  
American Rolling Mill Co., Middletown, Ohio

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Rivets—Stove**

Lamson & Sessions Co., Cleveland, Ohio  
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Rods—Stove**

Lamson & Sessions Co., Cleveland, Ohio

**Rolls—Forming**

Bertsch & Co., Cambridge City, Ind.  
Interstate Machinery Co., Chicago, Ill.

**Roofing Cement**

Connors Paint Mfg. Co., Wm., Troy, N. Y.  
Lastik Products Corp., Pittsburgh, Pa.

**Roof Paints**

Lastik Products Corp., Pittsburgh, Pa.

**Roof—Flashing**

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Roofing—Iron and Steel**

American Rolling Mill Co., Middletown, Ohio

Republic Steel Corp., Youngstown, Ohio

Inland Steel Co., Chicago, Ill.

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

Osborn Co., The J. M. & L. A., Cleveland, Ohio

Ryerson & Sons, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Roofing—Tin**

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

Taylor Co., N. & G., Philadelphia, Pa.

**Rubbish Burners**

Hart & Cooley Co., Holland, Michigan

**Schools—Sheet Metal Pattern Drafting**

St. Louis Technical Institute, St. Louis, Mo.

**Schools—Warm Air Heating**

St. Louis Technical Institute, St. Louis, Mo.

**Screws—Hardened Metallic Drive**

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

Parker-Kalon Corp., 200 Varick St., New York

**Screws—Hardened Self-Tapping, Sheet Metal**

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

Parker-Kalon Corp., 200 Varick St., New York

**Screens—Perforated Metal**  
Harrington & King Perforating Co., Chicago, Ill.

**Scuppers**

Aeolus Dickinson, Chicago, Ill.

**Shears—Hand and Power**

Interstate Machinery Co., Chicago, Ill.

Marshalltown Mfg. Co., Marshalltown, Ia.

Peck, Stow & Wilcox Co., Southington, Conn.

Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

The Stanley Electric Tool Co., New Britain, Conn.

Viking Shear Co., Erie, Pa.

Yoder Co., The, Cleveland, O.

**Sheet Metal Screws—Hardened, Self-Tapping**

Parker-Kalon Corp., 200 Varick St., New York

**Sheets—Alloy**

International Nickel Co., New York, N. Y.

Republic Steel Corp., Youngstown, Ohio

**Sheets—Black and Galvanized**

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Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

Osborn Co., The J. M. & L. A., Cleveland, Ohio

Republic Steel Corp., Youngstown, Ohio

Rockford Sheet Steel Co., Rockford, Ill.

Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

The Stanley Electric Tool Co., New Britain, Conn.

Viking Shear Co., Erie, Pa.

Whitney Mfg. Co., W. A., Rockford, Ill.

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Republic Steel Corp., Youngstown, Ohio

Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

**Sheets—Tin**

Taylor Co., N. & G., Philadelphia, Pa.

**Shingles and Tiles—Metal**

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

**Sifters—Ash**

Diener Mfg. Co., G. W., Chicago, Ill.

**Sheets—Iron**

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Fanner Mfg. Co., Cleveland, Ohio

**Vacuum Cleaner—Furnace**

Brillion Furnace Co., Brillion, Wis.

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Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

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**Wood Faces—Warm Air**

Auer Register Co., Cleveland, Ohio

American Wood Register Co., Plymouth, Ind.

Milcor Steel Co., Mill, Canton, Chgo., La Crosse, K. C.

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THAT'S what you have in effect when you set a furnace with METALUTE. It contains a large percentage of iron which, combined with its thermal qualities, makes it unexcelled for sealing furnace joints. It has practically the same coefficient of expansion as iron and therefore will not crack or disintegrate.

Send \$2.40 for a 12 lb. trial can. Money refunded if not entirely satisfactory.

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"The motor driven hand shear"

For inside and outside cutting of sheet materials of every description.

With a cutting speed of 15 feet per minute this tool increases the earning power and saves the energy of the men who use it.

It has a capacity of No. 18 U. S. Gauge (.050") hot rolled steel or galvanized iron.

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Absolutely safe to work with.  
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Compound lever handle—removable blades. Upper blade away from mechanic enabling easy following of work—an exclusive Viking feature.



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This type of extra punches and dies used in Punches Nos.

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Here's the Shears

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**SHEET METAL SHOP**



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THINK of being able to cut all your sheets—up to 18 gauge on one machine. That's what you can do with this mighty handy machine. Straight cutting or curves in any direction on sheets of any width. It's an unusual machine and it is unusually high grade. The blades are extra tough and stay sharp even with hard constant use.

The price is easily within the reach of the very smallest shop owner.

Write to Dept. A. A. for full details and price.  
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Marshalltown, Iowa

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# Classified Advertising

## BUSINESS CHANCES

**For Sale**—New business for shop or factory. Have new patentable steel gas furnace construction. Greater radiation, yet so simple, meets all competition. Would like to hear from firm who might be interested in manufacture and who could give employment to experienced sheet metal worker and furnace installer. Address R-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**For Sale**—Shop and business established over fifty years; good location; general sheet metal work, heating, and ventilating. Good furnace business. Only one competitor. Good opportunity. Selling on account of death of partner and old age. Will bear close inspection. Address T-530, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**For Sale**—Good river bottom farm of 80 acres. \$6,000 worth of improvements. Will sell for \$10,000 or will exchange for stock of hardware or furniture up to \$6,000. Railroad within two miles. Good schools and churches near. Good roads. For information, write L. F. Sutterer, Perryville Hardware Company, Perryville, Missouri. Y-532

**Wanted**—Location for a heating and plumbing business, or would buy a small stock of hardware where shop could be run in connection, or an interest in a going business. Northwestern states, Washington or Oregon preferred. Address P. O. Box 473, Harvey, North Dakota. A-532

**Wanted**—Location for Tin and Furnace business. Would buy going business if it can show business is to be had. Would run shop in connection with Hardware store for owner or as my own if space can be had and future prospects encouraging. Address Y-530, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**For Sale**—Bargain. 90 foot front by 113 foot depth. Located 90 feet east of Lewis and Clark bridge. Want to retire from business is the reason for selling. Address Chris Eckhard, Eckhard Mercantile Co., 512 E. Broadway, Alton, Illinois. X-530

**Wanted**—Location and tools for sheet metal and furnace shop, or will consider taking charge of your business on a percentage proposition. Ability and reference first class. Address G-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**For Rent**—A one story building; brick and concrete; floor space 98x54; suitable for small factory; has been shoe factory. Good shipping point at the Depot. Town of 700. Address J. J. Martin, Chamois, Missouri. B-533

**For Sale or Exchange**—My property, consisting of two stores, a room specially built for a tin shop, a three-car garage, and a seven-room flat—all modern. Address Emil Siepmann, Culver, Indiana. M-531

**For Rent**—Hardware store with fixtures. Splendid farming community in northwestern Illinois. Address W-530, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

## HELP WANTED

**Wanted**—A tinner who is capable of taking full charge of a good shop and run it on a percentage basis. Must furnish good references. Prefer a man who might be interested in buying the shop later on. Address K-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Wanted**—Heating Engineer to take complete charge of Heating Department. Must understand Domestic and Industrial forced-air heating. Address W-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**For Sale**—A Gottschalk "Christie" Furnace Cleaner—like new. Only used on two jobs. Will sell at great sacrifice. Address Farris Furnace Company, 10th Street and Enos Avenue, Springfield, Illinois. A-533

## HELP WANTED

**Wanted**—Would like to hear from a good experienced tinner, plumbing and heating man who would like to get into business with little money. I have a good shop in a Minnesota town of 3,000, no competition. Have too much work and wish to get a good working partner. Address O-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

## WANTED

Established steel furnace manufacturer wants man on straight commission basis for northern Indiana and Illinois. If you are confident of your ability to sell furnaces and are willing to accept an extremely liberal commission in lieu of salary and expense drawing account, address M-532, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

## Manufacturers' Agents

Wanted to sell our furnace cement, roofing paint and cement and calking compounds. Our consistent trade paper advertising is creating demand. Exclusive territory given with liberal commission. Address B-530, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Illinois.

## SITUATION WANTED

**Situation Wanted**—First class sheet metal worker. Experienced in general sheet metal work, blowpipe, skylight, furnace and ventilation. Would like to connect with some reliable concern either with or without hardware. At the end of one year if satisfactory, I would like to buy an interest or the entire business. Prefer northwestern Iowa or southern Minnesota, in town of about 10,000 to 15,000. Married, sober and reliable. Address J-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—Reliable experienced heating man and salesman, twenty years experience, wants connection with furnace manufacturers, cast or steel furnaces. Work with dealers on sales and layouts for modern installation with or without modern equipment. Address X-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—First class licensed plumber, sheet metal worker and heating man, steady, sober, and competent in all branches of the trade, would like steady position; or will take shop on commission. Address Arthur Greeter, Lake Geneva, Wisconsin. Z-532

**Situation Wanted**—By sheet metal worker with twenty years experience in contract shop. Would like to connect with shop wanting steady man who can do the work. Will come on thirty days trial. South Iowa, Illinois, Missouri or Kansas. Address K-530, AMERICAN ARTISAN.

**Situation Wanted**—Connection with a high grade furnace manufacturer as salesman, wanted. Illinois, Indiana, or Iowa preferred. Have had twenty years experience. Address B-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

## SITUATION WANTED

**Situation Wanted**—Would like to get in touch with parties interested in employing a salesman for gas fired warm air furnaces (Traveling for manufacturers). Have had seven years experience in gas furnace heating including estimating full costs, installations in both gravity and forced air heating. Have sold and supervised installations of approximately 600 jobs in this territory. Can give best of references. Address C-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—Twenty years experience in estimating, layout, selling and installing forced air heating and ventilating systems, and all kinds of roofing and sheet metal work. Can fill any position. Want connection with reliable company, preferable in Texas or West. Best of references furnished. Address H-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—Are you in need of a man who is thoroughly experienced in all lines of the sheet metal trade, making a specialty of warm air heating? Can estimate the work, lay out the plans, and make blueprints. Have had sales experience, and will look out for your interests. A good reliable worker. Address H-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**Situation Wanted**—By man thirty-five years old. Ten years experience in selling and laying out all types of warm air heating plants. Thoroughly understands forced air heating. Do own layout and drafting. Have a successful selling record. Wish position as salesman with manufacturer or jobber. Will go anywhere. References furnished. Address S-532, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Ill.

**Situation Wanted**—Sheet Metal Worker and furnace man wants a steady position. Thirty-nine years old, married, steady and sober. Can read blueprints, knows the standard code, can lay out any pattern. Have had blow-pipe and large heating experience. Willing to clerk. Can estimate if necessary. Address K-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—By man 54 years of age. Would prefer traveling position in Ohio although would be glad to entertain any offer in the furnace line. At the tin or sheet metal business practically all my life. Know, or have called on personally, around 150-200 furnace dealers in Ohio. Best of references furnished. Address W. D. Clemens, 622 Patterson Ave., Canton, Ohio. F-532

**Situation Wanted**—Would like to hear from some hardware firm who is in need of a good hardware clerk and salesman on or before April 1st. Job to be steady the year round. Twenty years of experience. Steady and reliable, Wisconsin preferred. Address O-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—Have had six years experience as an executive in warm air furnace manufacturing. Can handle credits, collections, sales correspondence and purchasing of materials; also familiar with registers, fittings, and filling orders for repair parts. References on request. Address C-532, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—By man thirty-five years of age, single, ten years experience in hot water, steam and warm air heating. Also sales managing and handling canvassers. Position wanted as salesman for a reliable furnace manufacturer or salesman and engineer for dealer. Address Geo. A. Whiteman, P. O. Box 112, Rochester, N. Y. G-531

**Situation Wanted**—Have had 15 years Warm Air Heating experience. Familiar with every detail of residence, school, church or industrial heating. Would prefer the southeast, either in office of manufacturer or as district representative of national organization. Address A-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**SITUATION WANTED**

Experienced furnace salesman wishes to associate himself with a reputable manufacturer having a complete line of furnaces. Wisconsin territory preferred. Address R-532, AMERICAN ARTISAN, 139 North Clark St., Chicago, Ill.

**Situation Wanted**—Tinner wants job. Twelve years experience; 34 years old; can do furnace work and radiator repairing; good reliable worker. Will go anywhere. State wages in first letter. Address M-530, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—By First Class radiator repair man. Can recore and rebuild all makes from a Ford to an airplane. Can also do furnace work. Address L-530, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**Situation Wanted**—By a first class sheet metal worker and furnace man. Good reliable man, steady and sober. Please state wages. Address T-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

**TOOLS AND MACHINES**

**For Sale**—Number 125 Fuller Rapid slitting shears, capacity 10 gauge. Will cut outside and inside circles from 5 to 48 inches. Will also slit straight sheets. This machine is in good working order and belt driven. Cash price, \$175.00 F.O.B. Kalamazoo. Address Knapper Sheet Metal Co., 216 East Walnut Street, Kalamazoo, Michigan. P-530

**For Sale**—A 72" Box and Pan Brake used only a few weeks. This machine will handle 16 gauge material and weighs around 2000 lbs. Also mounted on heavy casters. Price, \$150.00. Address Chas. Barnum, Mankato, Minnesota. E-531

**For Sale**—No. 2 Ryerson Lennox Shear, belt drive. Will handle 10 gauge material and will cut circles or straight. Price, \$100.00. Address Chas. Barnum, Mankato, Minnesota. D-531

**For Sale**—Used tinnery bench machines including 30" shear, role and folders; also plumbing tools. Address F-531, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Ill.

**For Sale**—Tinners tools. Cheap. For list and prices write B. P. Friebel, Manchester, Iowa. W-531

**TOOLS AND MACHINES**

**For Sale**—Two Stove Pipe Folders; one tin folder; one large buring machine; one small buring machine; one large thick edge; one small thick edge; two 30" square shears; roofing tongs; roofing double seamers; 30" rollers; three double seamers and other machines all in good working condition. Address P. W. Nicola, Leavenworth, Kansas. C-533

**For Sale**—Complete line of tinnery tools, including electric motors and drill press. For information call Beverly 6710, Chicago, or write Mend-All Repair & Manufacturing Company, 921 West 87th Street, Chicago, Illinois. D-533

**Wanted**—The Peck, Stow & Wilcox Company No. 1734 improved foot gang punch, or its equal in some other make. Quote full particulars and best price in first letter. Address L-532, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Ill.

**Wanted**—A four or six foot Box and pan brake, 16 gauge cap. Also 30" or 36" squaring shears. Address The Main Hardware & Supply Company, Painesville, Ohio. P-532

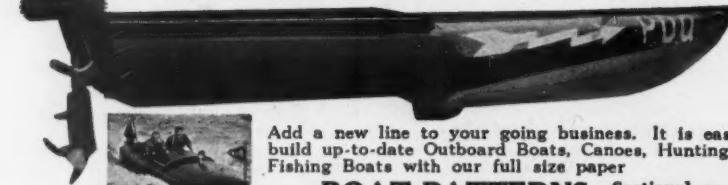
**Wanted**—A set of second hand tinnery tools and machines. Must be in good condition and cheap for cash. Address Roy K. Davis, 722 West Second Street, Xenia, Ohio. L-531

**Wanted**—A 10 foot brake for light iron. Address 20th Avenue Sheet Metal Works, 2141-43 Court Place, Denver, Colorado. J-532

**MISCELLANEOUS**

**For Sale**—100 lb. capacity acetylene lighting plant, underground type. New—never used. Also No. 270 International round hot water heating boiler, used. Write for prices. Address A. A. Clendenning, Keota, Iowa. T-531

**For Sale**—One 26" Canton Furnace Fan, 32 volt motor. Three Sheer Regulators. Will sell at a great sacrifice. Address The Ramey Manufacturing Company, 243 North Fifth Street, Columbus, Ohio. D-532

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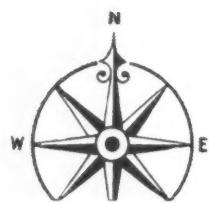
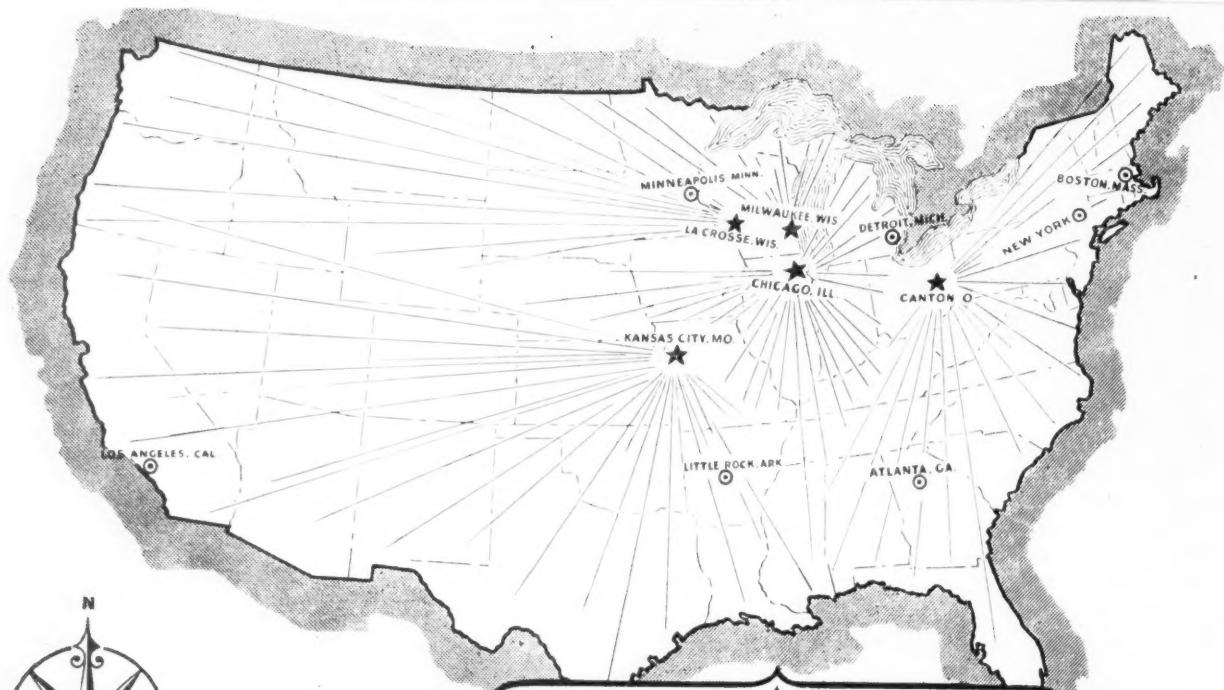
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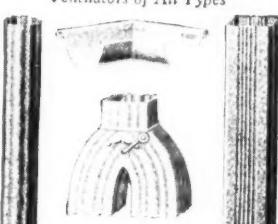
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